

WHEAT LIFE

The official publication of the Washington Association of Wheat Growers

FEBRUARY | 2019

THE IMPACT OF TARIFFS ON WASHINGTON AG

ALSO IN THIS ISSUE:

PCC Shortline gets BUILD grant

Automation, airplane imagery in ag, oh my!

The 2019 precision ag special section

The realities of Russia
in the world wheat market

What's in a name?



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**WASHINGTON
ASSOCIATION OF
WHEAT GROWERS**

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President's Perspective



In the thick of 'meeting' season

By Jeffrey Shawver

Winter is the slow season for many farmers, but not your Washington Association of Wheat Growers (WAWG) leaders. January kicked off our "meeting" season. We'll spend the next two or three months traveling between coasts, visiting legislators in both Olympia and Washington, D.C., and attending national industry meetings. In between those meetings, we'll be manning the WAWG booth at ag expo shows and taking part in the Agricultural Marketing and Management (AMMO) sessions. By the time spring rolls around, I suspect I'll be more than happy to trade my airplane seat for my tractor seat.

As I write this, the government shutdown continues. We've heard from growers who are growing anxious about their ability to apply for farm programs or get their cost-share funding. At WAWG, we are also worried about the delay in implementing the 2018 Farm Bill. Hopefully, by the time you read this, the shutdown will be in the rearview mirror, and we can get on with the business of keeping agriculture going and growing.

This issue of *Wheat Life* includes some items I want to draw your attention to. First, the Pesticide Application Safety Workgroup finally released their final report. This issue began back in 2018, when a bill was introduced into the state Legislature that would have required four days' advance notification before any pesticide application. The bill also included some pretty onerous reporting requirements. But before the bill got too far, the agricultural community, including WAWG, got together and opposed the bill. We were able to communicate our concerns and get the bill changed to a study bill. WAWG is satisfied with the report's recommendations (see page 16) and is looking forward to helping educate legislators and the public on how pesticide applications are actually done and the safety measures already in place to reduce drift.

The other thing I want to draw your attention to is the fact that our shortline rails just got a big shot of adrenaline. They successfully applied for a federal matching grant and will be receiving \$5.6 million to help replace and rehabilitate portions of the track. We are very fortunate here in the Pacific Northwest to have three modes of transportation available to move our products to port—rail, river and road. Keeping all three of those modes running as efficiently as possible is key to keeping our industry profitable. You can read more about that grant on page 34.

This issue also contains our special section on precision agriculture (PA). Remember when PA was something new and unusual? These days, I think it might be more unusual not to be using it in some way. On my farm, I've been experimenting with variable rate applications of fertilizer and seed, along with some minimal tilling. In my opinion, although the equipment is still rather expensive, this is the future of agriculture (however, I'm not sure about the self-driving tractors. Maybe I'll let my neighbors try those out first).

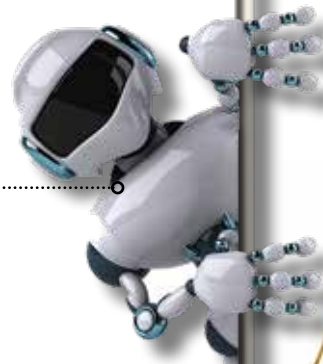
Don't forget that our 2019 AMMO series begins this month. Get more information at wawg.org/ammo-workshops/. The workshops are free for members (and only \$25 each for nonmembers). I hope to see you there. ■

Cover photo: Winter north of Almira, Wash. Photo by Alison Viebrock Steveson. All photos are Shutterstock images or taken by *Wheat Life* staff unless otherwise noted.

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PRECISION AG



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Editor's note: Here's hoping second time is the charm

You might have noticed the kerfuffle around last month's membership/nonmembership cover.

Every few years, we use an issue of *Wheat Life* to remind growers that just because they get the magazine, that doesn't mean they are members of the Washington Association of Wheat Growers (WAWG). Every person who sells wheat in Washington pays an assessment of three-quarters of one percent of the net receipts at the first point of sale. If you pay an assessment, you automatically get *Wheat Life*, but you aren't automatically a WAWG member.

WAWG relies heavily on membership dues to fund our advocacy activities. Those dues pay for plane tickets to Olympia and Washington, D.C., to meet with legislators and testify in front of committees. They pay for the time WAWG staff spends researching issues and writing letters. Those dues help pay for our free grower workshops and our presence at legislative tours and ag expo shows.

The consolidation of farms and the shrinking population of farmers has hit WAWG just like it's impacted the population of our rural towns. Every member is precious to us, and we are always looking for ways to motivate people to join. So when we started getting phone calls last month from members asking why they were getting

a *Wheat Life* that said they weren't members, we were... I don't think devastated is too strong of a word to use. We put a lot of time and effort into every issue of *Wheat Life*, but this issue is special. So to find out that instead of motivating growers to join us, the issue was angering some people...like I said, devastating, not to mention embarrassing.

We quickly got to the bottom of what happened. A simple mix up by our printing company meant our members received the issue meant for our nonmembers and vice versa.

However, we aren't ready to give up.

We still think it's important to reach out to our nonmembers and remind them of the work that WAWG does on their behalf. So, if you aren't a WAWG member, you'll be getting the special membership cover that you should have gotten last month. Please take a moment to look through it and consider the benefits of becoming a WAWG member. The more voices that join ours, the more effective we will be in advocating for our industry. For those of you who are already members, thank you. YOU keep us going. YOU are the reason we can do what we do.

—Trista Crossley, Editor, *Wheat Life*



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LEVELS OF MEMBERSHIP

	Greensheet Newsletter	Wheat Life Magazine	National Wheat Grower Newsletter	Annual Harvest Prints
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Grower or Landlord \$125	X	X	X	X
Family \$200 (2 family members)	X	X	X	X
Partnership \$500 (1-5 family members)	X	X	X	X
Convention \$600 (2 individuals)	X	X	X	X
Lifetime \$2,500 (1 individual)	X	X	X	X
Non-Voting Membership				
Student \$75	X	X	X	
Industry Associate \$150	X	X	X	

WAWG MEMBERSHIP FORM

Please check level of membership

- ☐ Student \$75
 ☐ Family \$200 (up to 2 members)
 ☐ Grower \$125
 ☐ Partnership \$500 (up to 5 partners)
 ☐ Landlord \$125
 ☐ Convention \$600
 ☐ Industry Associate \$150
 ☐ Lifetime \$2,500

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WAWG's current top priorities are:

- ✓ Preserving the Snake River dams.
- ✓ Maintaining a safe and sound transportation system that includes rail, river and roads.
- ✓ Establishing favorable trade agreements.
- ✓ Fighting mandatory carbon emission regulations.
- ✓ Fighting unreasonable notification and reporting requirements for pesticide applications.

If these issues are important to your operation, become a member today and help us educate our legislators and advocate for agriculture. We are making sure the wheat industry's voice is heard.

More member benefits:

- Greensheet ALERTS • WAWG updates
- Voice to WAWG through opinion surveys
- National Wheat Grower updates
- State and national legislative updates



**Washington Association
of Wheat Growers**

109 East First Ave. • Ritzville, WA 99169

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WAWG at WORK

ADVOCATING FOR THE WHEAT FARMERS OF EASTERN WASHINGTON



January's board meeting saw representation from nearly every county. All growers are invited to attend the Washington Association of Wheat Growers' monthly state board meetings. The next meeting is scheduled for Thursday, Feb. 7, beginning at 10 a.m. at the Wheat Foundation Building in Ritzville.

WAWG board gears up for 'meeting' season, appoints committee chairs

January marks the start of the legislative season, aka meeting season for the Washington Association of Wheat Growers (WAWG), and much of the time at January's state board meeting was spent discussing what's been happening in Olympia and Washington, D.C., and how it might be impacting growers.

Diana Carlen, WAWG's lobbyist in Olympia, called in with the first state legislative update of the new year. Although the Legislature had only been in session for less than a week, Carlen said they've hit the ground running, having already introduced bills that would tighten emission limits and set low carbon fuel standards. Carlen also talked about Gov. Inslee's proposed budget that includes more than a billion dollars to support recovery efforts for the state's resident orcas. The budget, a 20 percent increase over the existing budget, counts on additional revenue by taxing capital gains, an increase in business and occupation taxes on services, such as those provided by accountants and lawyers, and a change in the state's real estate excise tax.

Board members also reviewed WAWG's state legislative priorities for the upcoming Olympia Days trip.

In national legislation, board members were asked how the federal government shutdown was impacting their operations. Growers reported frustration in not being able to access Farm Service Agency offices to apply for federal programs, such as the trade mitigation program or cost share programs. There were also concerns that the shutdown is delaying implementation of the 2018 Farm Bill.

WAWG staff and leaders will be traveling to Washington, D.C., in mid-February to participate in the National Association of Wheat Growers' winter confer-

To cover or not to cover? Grower input wanted

Recently, the Washington Association of Wheat Growers (WAWG) has been hearing from growers across Eastern Washington concerned about the spreading of weeds in their fields through uncovered truckloads of hay and/or straw.

Some growers have suggested legislation requiring trucks to be covered while moving hay and straw, and there are reports that several county commissioners are looking into that. Other growers, while recognizing that there may be a problem, are reluctant to introduce legislation that has the potential to increase the cost and work associated with moving certain ag products off their farms.

WAWG is asking for grower input on this issue. Please contact the WAWG office at (509) 659-0610. ■

ence. The group will also be meeting with members of Washington state's congressional delegation.

In other business, the board elected growers Anthony Smith of Benton County; Ben Adams of Douglas County; and Andy Juris of Klickitat County to the executive committee. New committee chairs were also approved. They are:

- Jeff Shawver, Franklin County, Budget Committee;
- Andy Juris, Klickitat County, Marketing Committee;

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- Anthony Smith, Benton County, Membership Committee;
- Marci Green, Spokane County, and Ben Adams, Douglas County, National Legislation Committee;
- Nicole Berg, Benton County, and Larry Cochran, Whitman County, Natural Resources Committee;
- Marci Green, Spokane County, Public Information Committee;
- Jim Moyer, Columbia County, Research Committee;
- Ryan Poe, Grant County, State Legislation Committee; and
- Ryan Poe, Grant County, Transportation Committee.

The board also welcomed new board members Jim Moyer from Columbia County, Terry Harding from Lincoln County and Jeff Malone from Douglas County.

The next state board meeting will take place on Feb. 7, beginning at 10 a.m. in Ritzville. ■

January's county meetings

Franklin County

The January meeting of the Franklin County wheat growers went into the weeds, thanks to a presentation from the Franklin County Noxious Weed Board (FCNWB).

The FCNWB has announced a 2019 spring cost share program to help landowners combat noxious weeds, such as rush skeletonweed or Scotch thistle. The amount of cost share available to individual growers will depend on how many applications are accepted. The deadline to apply for the program was Jan. 31, 2019. The FCNWB has also invited growers to attend a weed board grower meeting on Feb. 28 at the Kahlotus Grange Hall at 8 a.m. Lunch will be provided by the Farmer's Daughter, and pesticide credits will be available. For more information, contact the FCNWB at (509) 545-3847.

County wheat growers' president, Leonard Van Buren, talked to the group about the local Farm Service Agency office being closed due to the government shutdown. Growers that weren't able to file the paperwork for the Market Facilitation Program before the original Jan. 15 deadline will have another opportunity as the deadline will be extended once the shutdown has ended.

The next meeting of the Franklin County wheat growers will be on Feb. 7 at Connell Grain Growers in Connell beginning at 7 p.m.

Whitman County

U.S. Department of Agriculture's Agricultural Research Service research geneticist, Kimberly Garland-Campbell,



In January, Whitman County wheat growers had the opportunity to hear from club wheat breeder Kimberly Garland-Campbell (second from left) talk about her breeding program and the areas she is focusing on.

stopped by last month's meeting of the Whitman County wheat growers to talk about her research, especially her work with club wheat.

Garland-Campbell said that when she first arrived in Washington state, most of the club wheat was being grown around the Odessa area, and she knew she'd have to increase yields in order to maintain the class's market. She's also worked hard on maintaining disease resistance in club wheat, especially to stripe rust. She feels it is important that all club varieties have both seedling and adult resistance to stripe rust.

Garland-Campbell also touched on the continuing research into low falling numbers (FN). She and other researchers are trying to pull FN susceptibility out of their germplasm. So far, research seems to be indicating that a fast emergence trait seems to be part of a variety's susceptibility to FN.

"We need to select for one, but not the other," she said. "We are trying to figure it out genetically, and I'm confident that we'll solve it."

Growers also heard a Washington Grain Commission (WGC) update from Gary Bailey, WGC chairman. He talked about the latest trade promotion activities WGC commissioners have participated in, as well as the current trade situation. As of Jan. 1, 2019, U.S. wheat is at a 7 percent disadvantage to Canadian and Australian wheat in Japan because of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The U.S. is not part of that trade agreement.

"Being outside of the CPTPP is starting to catch up to us," he said.

The next meeting of the Whitman County wheat grow-

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ers will be on Friday, Feb. 22, beginning at 11 a.m., at the Public Service Building in Colfax, Wash. This will be a joint meeting of the county wheat growers and the Whitman County Crop Improvement Association. Growers who are planning to attend need to RSVP to Steve Van Vleet at svanvleet@wsu.edu so he can get a head count for lunch. ■

WSU ag student wins scholarship for third time

Kayla Beechinor is becoming a familiar face to the people who run the Jerry Minore Scholarship program. This is the third year in a row that she's been selected as a recipient.

Beechinor is a junior at Washington State University, where she is majoring in agricultural biotechnology and field crop management with an eye towards becoming a plant breeder.



She grew up on a wheat farm in Walla Walla, Wash., with her parents, Jason and Sarah, and a younger brother and sister. She is the seventh generation on her family's farm, and she will be heading to France this summer to intern with Limagrain's breeding program.

"I like whole idea of being able to feed the world, and I really like the science and being able to be outside in the field," she said of her future career. Beechinor will be headed to Commodity Classic in Orlando, Fla., at the end of the month to receive her scholarship, which is run by BASF and the National Wheat Foundation to honor the work and



AG EXPO OUTREACH: For the fourth year in a row, the Washington Association of Wheat Growers (WAWG) had a booth at the Eastern Washington Ag Expo at the TRAC in Pasco Jan. 8-9. The booth promoted WAWG membership and programs, as well as public education through our trivia game and materials. Thanks to Benton County grower, Anthony Smith (right), for volunteering to help staff the booth.

life of Jerry Minore, a former BASF employee, a long-time friend of the wheat industry and an advocate for wheat farmers. Each year, the program awards four scholarships to college students who have a connection to the wheat industry and are pursuing careers in agriculture.

The biotechnology portion of Beechinor's career path has focused her attention on what she thinks is a major issue facing the agricultural industry—widespread acceptance of GMOs by the general public. She acknowledges that the technology in creating a GMO is complex and difficult to understand, even for herself, let alone a nonfarming consumer.

"I've been learning about them for the past three years, and I'm still learning about them," she said.

Beechinor offered advice to consumers worried about consuming GMOs, asking them to do some research, talk to people in the industry and try look at all the different sides of the GMO argument with an open mind.

"Farmers feed their families the same exact thing (as other consumers). I've never met a farmer who would want to give something to their family that would harm them. This is their business, their life. They aren't going to plant crops that are harmful," she explained. ■

How are we doing?

Like something you read in *Wheat Life*? Disagree with something you read in *Wheat Life*? Let us know by emailing your comments and suggestions to editor@wawg.org or mail them to 109 East First Avenue, Ritzville, Wash., 99169-2394. Please keep submissions less than 350 words. Submissions may be edited for length. ■

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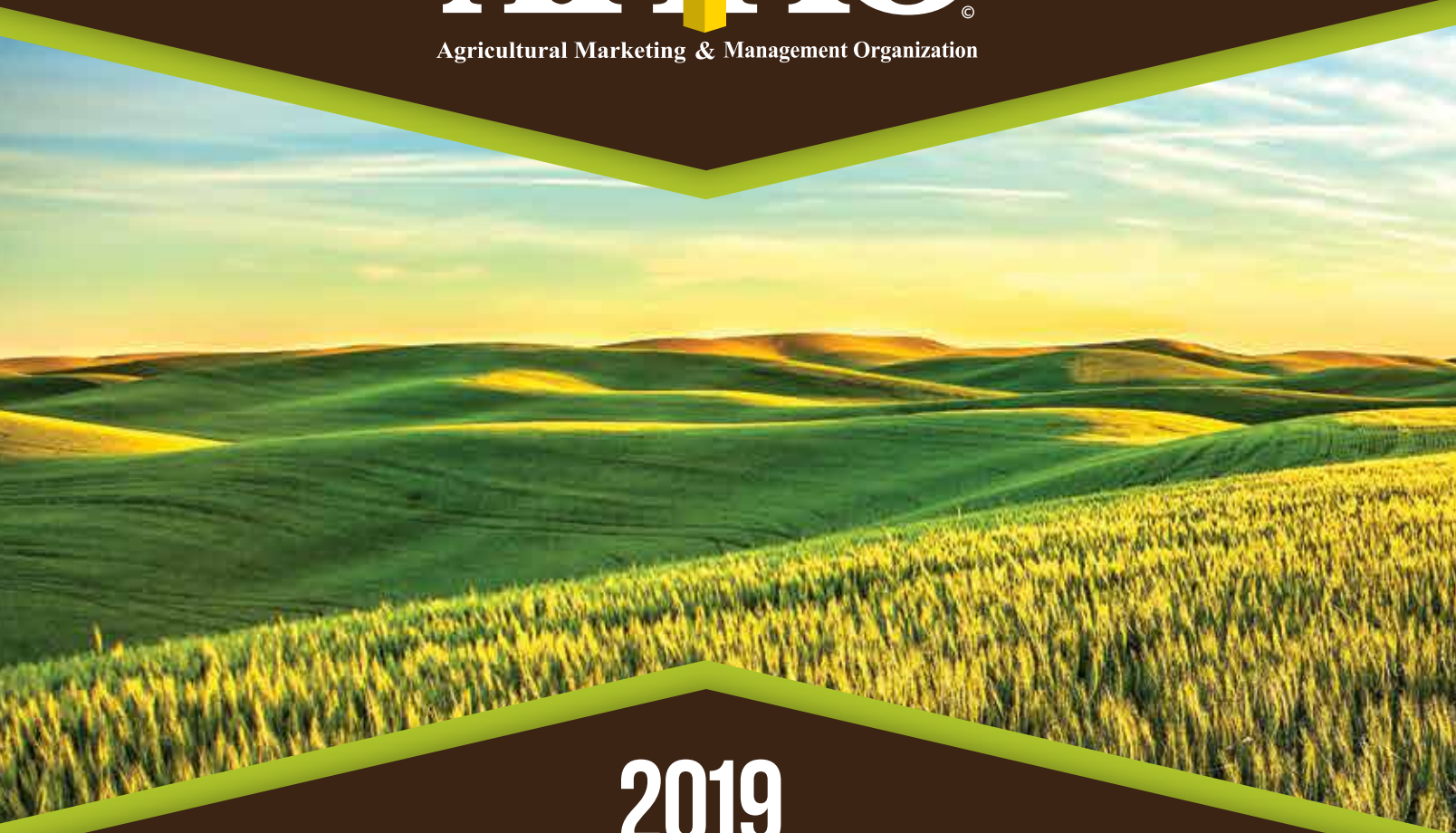
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2019 WORKSHOP SCHEDULE

FEB 13 AG POLICY AND WEATHER OUTLOOK

Speakers: Clinton Griffiths and James Garriss

Location: Holiday Inn Airport

1616 South Windsor Drive, Spokane, WA

FEB 19 MARKET OUTLOOK AND THE FOUR RULES OF UNDERSTANDING MARKET BEHAVIOR

Speaker: Darin Newsom

Location: Holiday Inn Airport

1616 South Windsor Drive, Spokane, WA

FEB 28 VARIETY OPTIONS TO MEET TODAY'S CHALLENGES

Speaker: Ryan Higginbotham

Location: Washington Wheat Foundation

109 East 1st Avenue, Ritzville, WA

JUNE 6 WHEAT COLLEGE

Speakers: Live presentations from WestBred & WSU Extension

Location: Columbia County Fairgrounds, Dayton, WA

Time: 9:00 a.m. - 3:00 p.m.

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POLICY MATTERS

Legislature begins session with focus on environmental bills

By Diana Carlen
WAWG Lobbyist

The Washington State Legislature convened its 105-day session on Monday, Jan. 14, in what we expect to be a busy year. Democrats control the agenda in Olympia after significantly increasing their margins in the November election. Democrats control the Senate 28-21 and the House by 57-41. Twenty-eight new legislators were sworn into the House and Senate last week.

Each biennium is comprised of a long year (105 days) and a short year (60 days) in which bills may be enacted into law. In addition to changes in law, during long sessions, the Legislature must enact a two-year balanced operating budget.

In addition to passing the biennial operating budget, long sessions traditionally see the introduction of hundreds of policy bills. We've already seen the introduction of 744 bills in the first few weeks of the session. The first legislative deadline is Feb. 22, 2019, when all bills must pass out of their policy committee to remain alive.

Governor highlights climate change in speech

On Jan. 15, Gov. Inslee delivered his State of the State address, which outlined his top priorities for the 2019 Legislative Session. As anticipated, his top priorities are policies addressing climate change, specifically, clean electricity, clean buildings, clean transportation, eliminating hydrofluorocarbons and setting a clean fuel standard.

Other priorities mentioned in the State of the State include plans to fund orca recovery in Puget Sound; mental health; early education; higher education; affordable housing and homelessness; pardoning misdemeanor marijuana convictions; affirmative action; broadband expansion; sexual harassment; gun safety; ending the death penalty; public-option health insurance as a step towards health-care for all; and police use-of-force.

\$1.1 billion towards a plan to help save orcas

In late December, Gov. Inslee released his proposed 2019-21 state operating, capital and transportation budgets, which included a combined \$1.1 billion towards his plan to help save the orcas. It is important to note that the governor releases his proposed budget priorities first, and then the Senate and House budget leads release theirs during session before a final budget is negotiated.

Highlights from Gov. Inslee's proposal include:

- \$580,000 in the operating budget for the Department of Ecology to increase the amount of water in salmon-bearing rivers and streams by modifying state water quality standards to allow more spill over the Columbia and Snake river dams.
- \$750,000 for the Southern Resident Killer Whale (SRKW) Task Force to lead a stakeholder process on the Snake River dams. The Columbia-Snake River System is undergoing a federal environmental impact statement review on the operation of the dams in 2020. Following the SRKW Task Force recommendations, Inslee's proposal requires the state to facilitate a stakeholder process to inform a path moving forward should the Lower Snake River dams be removed.
- \$6.2 million in the operating budget to boost enforcement and improve compliance with state and federal habitat protection laws.
- \$17.8 million in the operating and capital budgets to create incentives that encourage voluntary actions by landowners to protect habitat through the Washington State Conservation Commission.
- \$12 million in the operating budget to maximize existing capacity at the Department of Fish and Wildlife hatcheries to produce an additional 18.6 million salmon smolts, which will result in approximately 186,000 additional adult returns.
- \$75.7 million in capital budget investments to make improvements to keep the hatchery system operating and meet water quality standards.
- \$524,000 in the operating budget to examine issues related to increasing the Chinook population by reestablishing salmon runs above Chief Joseph Dam in both Puget Sound and the Columbia River.
- \$743,000 in the operating budget to improve monitoring and management of forage fish that provide the food source for Chinook.

Energy proposals take center stage

As previously mentioned, Gov. Inslee's top priorities for the 2019 Legislative Session include a package of clean energy bills focused on climate change. The legislature hit the ground running, scheduling major policy bills for public hearings during the first week of session. ►

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- **Low Carbon Fuel Standard (HB 1110):** On Jan. 15, the House Environment and Energy Committee held a public hearing on legislation that would direct Ecology to adopt a rule establishing a Clean Fuels Program (also known as a low carbon fuel standard) to limit the greenhouse gas emissions per unit of transportation fuel energy to 10 percent below 2017 levels by 2028 and 20 percent below 2017 levels by 2035. WAWG is opposed to this legislation.
- **100 Percent Clean Energy (SB 5116).** The centerpiece of the governor's climate change energy legislation was heard on Jan. 17 in the Senate Environment, Energy and Technology Committee. SB 5116 is governor-request legislation sponsored by Sen. Reuven Carlyle (D-Seattle). The legislation would require all electric utilities to be 100 percent carbon free by 2045. It would begin by phasing out all coal from the state's grid by 2025. It would set interim targets for 2030 and eventually get to carbon-free electricity by 2045. The chair of the committee has indicated that he is working on a revision to the bill and plans to pass it out of the policy committee next week. The companion bill to SB 5116, **HB 1211**, is sponsored by Rep. Gael Tarleton (D-Seattle) and was scheduled for a public hearing on Jan. 22.
- **2015 Paris Climate Agreement (HB 1113).** The House Environment and Energy Committee heard legislation to modify the state greenhouse gas emissions reduction targets to 26 percent below 2005 levels by 2025. ■

Workgroup releases pesticide report; calls for more training

By Trista Crossley

A state workgroup, tasked with making recommendations for improving pesticide application safety, has released its final report, calling for expanded training for pesti-



Erin and Gavin Morse acquired GEM Air Inc., an aerial application service in Warden, Wash., in 2015. They were worried that the requirements in the original pesticide bill would force them out of business. Pictured is Gavin working in his Air Tractor AT-602. Photo by Francis Zera of zeraphoto.com.

cide applicators and handlers and the establishment of a new pesticide application safety panel.

The pesticide workgroup grew out of legislation put forth during the 2018 Washington State Legislative Session. The original bill called for a four-day notification period before farmers could apply pesticides, as well as onerous reporting requirements. After intense lobbying by the agricultural community, the bill was changed into a study bill that was eventually passed by the Legislature. The workgroup was co-chaired by Saldaña and Rep. Tom Dent (R-Moses Lake). Members included House and Senate legislators from both sides of the aisle, as well as representatives from the Washington State Department of Health, the Washington State Department of Agriculture (WSDA), the Commission on Hispanic Affairs, the Washington State Department of Labor and Industries and the Washington State Department of Natural Resources.

The workgroup's two recommendations regarding what can be done now to improve pesticide application safety are:

- **Expand training.** The report found that there is a high demand for training but that WSDA lacks sufficient resources to meet those demands. The report recommends increasing training opportunities for pesticide applicators and handlers that emphasize safety. Additional funds would also allow more training dates to be offered.
- **Establish a new pesticide application safety panel.** The panel, which would include agricultural workforce and industry groups, would provide an opportunity to evaluate and recommend policy options and investigate exposure cases.

"We fully agree with the recommendations put forth in the pesticide safety workgroup," said Michelle Hennings, executive director of the Washington Association of Wheat Growers (WAWG). "The original bill would have made it nearly impossible for farmers to apply pesticides to their fields. When farmers see a problem, they need to be able to

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WAWG was part of the effort to oppose the original bill. Growers traveled to Olympia to testify in public hearings for the original bill, submitted comments and attended the workgroup’s meetings throughout the summer of 2018. The workgroup was directed to review:

- Existing state and federal laws regulating pesticide safety and application;
- New technologies to increase pesticide application safety;
- The structure of the former pesticide incident reporting and tracking panel to determine if a similar group should be created; and
- Review current data and reports from Washington and other states that may be helpful in developing strategies to improve pesticide application safety.

According to the final report, the workgroup found that the pesticide-related training offered by WSDA does not meet current demand due to a lack of funding and staff resources. It also found that various state agencies separately collect pesticide exposure data, but have issues sharing that data due to system limitations and statutory mandates. There is also a general lack of baseline data regarding pesticide applications. Other findings include issues with communication about safety risks due to language barriers and under-reporting pesticide exposure.

The workgroup concluded that while the safety of pesticide appli-

cations in Washington state has improved, there are opportunities for further improvement. The report recommends draft legislation to fund expanding the WSDA training program and establishing the pesticide application safety panel. To read the report, go to doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/Pesticides/ApplicationSafetyWorkgroup.

Erin Morse and her husband, Gavin, have owned GEM Air Inc. in Warden, Wash., since 2015. They are an aerial application service that applies crop protection products across Eastern Washington, including both dryland and irrigated, conventional and organic crops. Morse estimated that they spray hundreds of thousands of acres every year. She said she was floored when she first saw the proposed bill and felt it was specifically targeted towards aerial applications and air blast sprayers.

“We were unsure if (the bill’s sponsor) was someone who specifically didn’t like airplanes, or if it was someone who clearly didn’t understand agriculture and the many moving parts that happen inside that umbrella,” she said. “If that bill would have passed, that would have literally killed our business. We love where we are, and we love what we do, and we love our growers. It’s how we put food on the table for our kids.”

Besides the four-day notice, Morse was also very concerned about the reporting requirements included in the bill. She felt that the way the bill was written, their company would have had to report information that is proprietary to their growers.

“We were very uncomfortable with that request because it felt like they were asking us to release information that wasn’t ours to release,” she explained.

Morse testified at the committee hearings and attended all the workgroup’s sessions. She said that during the legislative sessions, the atmosphere was very intense and confrontational, but as the workgroup process got moving, things got better. She thought the workgroup members did a pretty good job of trying to be fair and balanced, listening to both sides of the argument and trying to educate themselves.

“I felt like the process went very well, and they tried to be open. That’s not to say the meetings didn’t get intense, but even with those intense feelings, they



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worked to make sure everybody felt addressed and heard," she said.

Morse feels that the outcome of the workgroup is fairly positive, especially compared to how it got started.

"If they could take what's in this report and put it through the Legislature without any addendums or alterations, then I think we could have a pretty positive start to creating a really great place of communication for different agencies and stakeholders in agriculture that previously maybe hadn't been talking as well as they could be," she said. ■

Schrier named to ag committee

Newly elected Washington Democratic congresswoman, **Kim Schrier**, has been named to the House Agriculture Committee. In November, Schrier was elected to represent Washington's 8th District, replacing Republican Dave Reichert who retired. In a press release, Schrier said she was happy to be joining the ag committee.



"Finally our region will have someone to speak up for our fruit, hay and wheat farmers. I will also be able to work on policy related to food programs and making sure that our kids get the nutrition they need to stay healthy. And of course, I will always be involved in any conversation or decision related to healthcare, making it more affordable and bringing down the cost of prescription drugs."

Schrier was also named to the Education and Labor Committee. ■

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On Jan. 1, North by Northwest, A Digital Studio (NXNW) became our public outreach creative partner. NXNW is based in Spokane and has been working in digital media production for more than 28 years. They specialize in agriculture and natural resource work, and they have worked with numerous Washington farming and ranching organizations including the Washington State Department of Agriculture, the Washington State Potato Commission, the Washington Apple Commission and the Washington Beef Commission. NXNW also produces the Emmy-winning television show, "Washington Grown." Their team of experienced digital media professionals will be leading public outreach efforts on behalf of the Foundation, including social media and other outreach activities.

With a fresh start in 2019, the Wheat Foundation outreach plan will ease into a few changes. We will be focusing on gaining authentic followers using techniques that earn genuine trust and increase engagement. We will also slowly revert back to emphasizing messages regarding the Foundation's original mission of supporting the small grains industry. A new Foundation website and small grains focus on social media will emphasize the Washington wheat brand. We will use Facebook to our advantage and utilize original Washington grains video content to increase social engagement. This, along with more consistent activity, should increase the digital footprint of small grains messaging among consumers. Other programs will also be developed as we move into the spring and summer months.

WHEAT FOUNDATION AUCTION RECAP

The Foundation greatly appreciates the generous donations to the 2018 auction at the Tri-State Grain Growers Convention in November, which brought in more than \$7,000. From gift baskets to Yeti Coolers and farm toys to fine wines and weekend getaways to Kellogg, Idaho, and Fort Collins, Colo., there was something for everyone to bid on. Donations and those who bid on and purchase the items make it possible for us to support the educational programs and scholarships administered by the Foundation.

GRANTS AWARDED TO THOSE ADVANCING THE WHEAT INDUSTRY

The Washington Wheat Foundation is pleased to announce the recipients of grant funds awarded at the end of 2018.

Patricia Okubara, from the U.S. Department of Agriculture's (USDA) Agricultural Research Service, will be working on a root health study to quantify root length, which is the direct indicator of root health and a critical component of soilborne pathogen research. With the new equipment received, the lab will run experiments to provide knowledge and resources for non-GM disease resistance and biocontrol in order to support sustainable agricultural practices and a safe food supply.

Washington State University's (WSU) **Chunpeng James Chen** was awarded funds to purchase a 4-GPU computer, which will have the computing capability to process hyperspectral imaging to predict falling numbers. Success in the project would provide producers and breeders the rapid tools to partition sprouted/sound wheat in real time and identify breeding lines with resistance to low falling numbers. Chen will be collaborating with WSU breeders and geneticists, as well as two USDA scientists.

Our final grant was presented to **Samuel Revolinski**, a Ph.D. student at WSU. Samuel will be purchasing a High Precision Global Positioning receiver to increase the accuracy of satellite phenotyping for wheat breeding. The anticipated results will gain better pictures of the young plants, which will lead to improved GPS precision and accuracy of identifying varieties on satellite images and determining the correct varieties for producers and breeders in certain areas to increase overall income and variety selection. ■

Calendar:

Washington Wheat
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beginning at 1 p.m. at
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Tracking the tariffs

Current trade environment threatens stability of Washington state's agriculture industry

By Trista Crossley

Trade, to put it lightly, is a pretty big deal in the Evergreen state.

More than 300 crops are grown here, worth \$10.6 billion in 2017. The processed foods sector, in 2016, generated more than \$20 billion in revenues, and the value of food and ag products that were exported overseas in 2017 was approximately \$6.7 billion.

The current trade environment puts all of that on uncertain ground. Rianne Perry, manager of the Washington State Department of Agriculture's (WSDA) International Marketing Program, said in regards to the retaliatory tariffs from China, many of Washington's agricultural products are on at least one of the lists of targeted products, if not more than one. WSDA estimates that approximately \$1 billion worth of Washington agricultural exports are at risk from retaliatory tariffs, including those from China, Mexico, Canada, the EU and India.

"Certain industry sectors have been hit pretty hard," she explained. "For example, cherries are on two of China's retaliatory tariff lists. Unfortunately, China was the number one market for Washington cherries. The first set of tariffs went into effect in the spring before the season started. When the season began, they didn't seem to have too much of an effect. But in July, the second set of tariffs hit for an additional 25 percent, and that's when things ground to a halt."

Although the cherry industry is still trying to quantify the effect the tariffs have had, Perry said there are concerns that if the tariffs continue through this year, the

China market could be closed permanently.

"That is a lot of fruit that has to go other places. Other markets are interested in our cherries, but they are a perishable, expensive, high-value product, and it's difficult to find another market to take that volume. China was a premium market, paying the highest prices for the best fruit," she added.

China is also a big market for Washington's seafood industry. From July through October of last year, Perry said seafood exports to China were down 40 percent compared to last year. Dairy exports to China, for that same period, were down 73 percent. But it's not just the Chinese tariffs that are taking a toll.

India has threatened to impose tariffs, although they haven't done it yet. But because of the uncertainty the threat has caused, exports of pulse crops, such as chickpeas, to that country are down 80 percent from July through October of last year. India is the top market for pulse crops. Apple exports to India are down as well.

"There is a concern that some of these trade issues are forcing buyers to look at other markets," Perry said. "The fear is that if this doesn't go away, those countries will have created new relationships, and we will have trouble getting these markets back."

Uncertainty is also being created by the U.S. not being involved in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), which went into effect at the beginning of the year. Non-CPTPP members will be at a serious dis-



advantage as their goods will face higher tariffs than member countries. U.S. wheat, for example, will eventually cost Japanese buyers \$85 more per ton than Canadian or Australian wheat. And it's not just wheat. Washington beef, dairy, potatoes, tree fruit and wine are all concerned, Perry said. "Japan is a top market for many products, and they are concerned about losing market share from the U.S. not being part of that trade agreement," she said, adding that the harm will also be seen by missing opportunities in growing countries like Vietnam.

The renegotiated North American Free Trade Agreement, now called the United States-Mexico-Canada Agreement, or USMCA, is also causing some concern. Perry said Mexico is a huge market for apples and dairy, and Canada is a huge market in general for Washington agriculture simply because of its proximity.

A helping hand

While the bigger commodities tend to have stakeholder groups, funded through grower assessments that help develop and maintain export markets and advocate for their growers, many other crops rely on WSDA's International Marketing Program.

According to its website, the International Marketing Program supports the health and viability of Washington's food and agricultural businesses and facilitates buyer-seller connections, delivers resources and continually advocates for global market access. The program has export development trade specialists in Olympia, Seattle, Yakima and Kennewick, as well as contract representatives in Japan, China, Korea and Vietnam. Perry broke the program's mission into three core functions:

- Providing technical assistance to growers and businesses such as helping them understand export and

import requirements and connecting them to the right officials to get products out of customs. The program's overseas representatives, who are experts in their countries' export and marketing of food products, can provide guidance on products that would be a good fit for a particular market or that particular country's labeling requirements.

- Buyer-seller matchmaking, which is connecting Washington companies with potential buyers in overseas markets. This is mainly accomplished through trade missions and trade shows.

"We vet the buyers to make sure they're the right type, that they have the right licenses, that they are the right type of company so we have the best possibility for success. Then we usually set up one-on-one meetings between the Washington companies and buyers. We often do site visits as well. That gives buyers a sense of how the seller functions," she said.

- Advocacy. This usually involves Perry and other high-level WSDA employees meeting with foreign governments or participating in government trade missions, basically "...anything we can do to get in front of a government official who will work with the industry to bring up trade issues and try to move the needle," she explained.

Although WSDA's International Marketing Program does work with the larger commodity commissions on occasion, they mainly look for sectors that don't have a lot of resources to do marketing activities themselves. The program is able to tap federal funding through the Market Access Program.

"We do a lot with seafood, mainly because there's nobody else that can really help them, and we have a thriving seafood industry here in Washington state," Perry said. "Blueberries are another example. There is a blueber-



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ry commission, but they don't have an international marketing staff. The blueberry industry is exploding. There's lots of blueberries, and they need to find a home."

While much of the focus of the marketing program has been on the Pacific Asian region, Perry said they are also seeing interest from the Middle East and some of the Central and South American countries.


Late last year, WSDA Director Derek Sandison proposed a package of programs to help Washington agriculture mitigate the effects of the ongoing trade disruptions. His proposal would have provided funding for grant programs to help develop new markets and address nontariff trade barriers; created a labeling and marketing program to increase the visibility of Washington agricultural products; and enhanced funding for some existing WSDA

programs to help with trade mitigation. The proposal also included a program to promote a Washington state brand for agricultural products. Unfortunately, funding for the package wasn't included in Washington Governor Jay Inslee's budget proposal. For now, the package is shelved.

Without that package, there is little more the WSDA or the International Marketing Program can do to help producers and food processors that are struggling to survive the challenging trade environment.

"Other than continuing our efforts through the International Marketing Program to help commodity groups explore new markets, there's nothing beyond that that we can do," explained Hector Castro, WSDA communications director. "The best we can do is continue to focus on the mission of the program." ■

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Agriculture automatically

ADVANCES IN TECHNOLOGY ARE BRINGING AUTONOMOUS FARMING CLOSER TO REALITY

By Trista Crossley

The agricultural industry isn't quite ready to replace humans with machines yet, but that day is getting closer. Just as tractors replaced horses, one day, a sensing, decision-making autonomous machine might replace a farmer in the field.

Dr. Manoj Karkee is an associate professor in the Biological Systems Engineering Department at Washington State University (WSU). He is based in Prosser, Wash., where he leads a research team as part of the WSU Center for Precision and Automated Agricultural Systems. Karkee's research focuses on automation and robotic technologies, and he has been working to develop a machine that will harvest apples and cherries for the fresh fruit market. His other area of research involves automated pruning of fruit trees.

"While a lot of things remain uncertain, I believe agricultural automation and robotics has gotten more traction than ever, and I think we are heading in the right direction. In the near future, five or 10 years from now, we should start to see automated machines working in our fields," Karkee said.

Different crops will likely have different levels of automation, just as they currently have different levels of mechanization. Karkee pointed out that in field crops such as wheat, harvesting has been mechanized for a long time and already employs some level of automation, such as GPS autosteering. Harvest in fruit and vegetable crops still largely relies on manual labor. Automation, Karkee said, is making machines do more by themselves and when looking at completely autonomous solutions in agriculture as a whole, no one crop is ahead of the curve.

"Row crops have had solutions that have been used for quite some time. However, if going into the next phase of what we call, in general, smart farming or agriculture 4.0, the goal there is to use machines to understand what is happening, make decisions and do things by themselves," he explained.

Part of the problem researchers are still working on is that while machines can detect a problem in a field or orchard from, say, drone photos, they can't diagnose the problem.

Besides automating a crop's harvest, Karkee sees possibilities for automation in chemical applications. Variable rate application already exists, and farmers are currently employing it, but he says the technology still has room to grow by having machines that are able to make a decision in the field using available data.

"I think in that area, even though it is completely



Dr. Manoj Karkee is an associate professor in the Biological Systems Engineering Department at Washington State University (WSU) based in Prosser, Wash. His research focuses on automation and robotic technologies, and he has been working to develop a machine that will harvest apples and cherries for the fresh fruit market. Photo courtesy of Washington State University.

mechanized in crops like wheat, there is room for adding intelligence to it," he said, explaining that as the machine moves through a field, it will detect a problem or variability, so rather than uniformly applying a chemical, it will vary the rate, within maybe inches. "The ultimate goal of precision agriculture is to be able to manage individual plants. Is that something we could do in next decade or so in wheat? I don't know. Wheat has very tiny plants and a high density. If we are talking about apple trees, we already manage them individually."

As with any new technology, automation has to make economic sense before farmers are likely to adopt it on a wide scale. Other issues agricultural automation will need to address include the ownership of data that is being collected and the privacy and security of that data.

While readers of *Wheat Life* might think wheat is the superior crop, Karkee said farmers of higher value crops might find it easier to justify the expense of automation because they tend to have a higher revenue per acre. Additionally, labor tends to be a much bigger expense in higher value crops—think picking strawberries or asparagus—which leaves more room for innovation in autonomous solutions.

"Labor is a primary driver for both funding agencies as well as researchers," Karkee said. "In fact, though, whatever comes out of this will be beneficial for crops where the labor pressure is not as high. (The research) is certainly driven by high labor costs as well as safety, for example,

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a chemical application. When the operator is in the field applying chemicals, they are embedded in that toxic environment. That's true in tree fruit crops and wheat. If we come up with automated solutions, that technology could benefit wheat growers as well."

Looking back over the path automation has traveled, Karkee said there have been several recent innovations that have helped the technology develop. One, particularly for tree fruit crops, is that horticulturists have developed very simplified canopy structures, and farmers have adopted those. This allows robots to access the fruit in a way that would have been impossible even 10 years ago. Another innovation, from a technology aspect, is what Karkee called "deep learning."

"In simple terms, our ability to understand the environment and detect issues in fields or on objects, like apples or branches or leaves, has improved substantially in the last five or 10 years. That is a fundamental part of using a machine to do things automatically," he said. "Computer technology has also improved so much and the cost has gone down so much that we can use very complex software to do these jobs in real time at very low cost. Finally, there have been faster and more reliable robotic machines developed for the medical industry or other applications that all help agricultural automation."

See DOT run...by itself

Can you imagine running your farm without a tractor? That's the goal of DOT Technology Corporation, a Regina, Saskatchewan-based company that is gearing up to release one of the first commercially available autonomous farming machines.

According to Leah Olson, CEO of DOT Technology, the idea was the brainchild of no-till pioneer Norbert Beaujot,



The DOT Power Platform is designed to work with multiple types of farming implements, such as seeders, grain carts and sprayers. Photo courtesy of DOT Technology Corporation.



Leah Olson is CEO of DOT Technology Corporation, which is based in Regina, Saskatchewan. DOT is planning to release one of the first commercially available autonomous farming machines later this year. Photo courtesy of DOT Technology Corporation.

founder of SeedMaster, the company that is manufacturing the DOT Power Platform. Beaujot originally envisioned an autonomous auto seeder but realized that it would be more useful if the platform could be used for other applications as well.

"The concept of the 'U' shape came about by trying to think outside the box in terms of weight distribution and how to use a piece of equipment in a way that benefits the farm overall," Olson said. "When we launched in summer of 2017 in western Canada, we got lots of press, but more importantly, we got lots of excitement from farmers. We are preparing for commercial launch in 2019 primarily in western Canada because it's the farmland and farming practices we know best. From there, we will expand geographically, making sure DOT's Power Platform and implements are available to farmers in other regions of the world as well."

Currently, DOT's focus is on implements that are pulled behind a tractor, but Olson isn't ruling out eventually partnering with other manufacturers that have more experience in other types of machines, such as combines and headers. She is confident that the prospects for automating wheat farming are wide open.

"I think when you take the farmer out of the cab, farm operations can really be looked at differently. Spraying, for example, is where we have a lot of interest. It opens the opportunity to consider what else could a farmer be doing while his fields are being sprayed? We are also looking at rollers and at grain carts and how to automate those," she explained. "We've challenged our team to look at other applications. Our intent is to be able to replace the tractor."

In order for field operations to be automated, the fields have to be mapped first, and every obstacle, from sloughs to power poles to rock piles, have to be located and their position identified before the DOT Power Platform gets to work. One of the challenges to adoption of the equipment that Olson's team has identified is how to give operators

access to the information they would normally be getting or seeing if they were sitting in a tractor cab, such as moisture levels or areas of a field with pest issues.

"This is where DOT's background as a technology company in agriculture gives us a competitive advantage, because we can identify these areas and say these are important to the farmer. The farmer may be reluctant to let go of the cab because this is where they see things that might impact yields," she said.

Another obstacle that DOT Technology has to address is government safety standards.

"We are already starting to talk with relevant government agencies about what does this look like on public roadways? Can it operate on public roadways? That's a big obstacle, but I think that pales in comparison when we look at the opportunities," Olson said. "When you think about a farm that has a DOT Power Platform in all of its functions, then things start to get interesting. It's a fundamental change."

Equipment tends to be the most expensive part of a farming operation, and the return on investment is a critical part of a farmer's decision-making process. Olson says the DOT Power Platform, when it is commercially available later this year, will retail for about \$260,000 U.S. The company has done comparisons with machines of similar horsepower and found that the DOT Power Platform uses about 20 percent less fuel and causes about 20 percent less soil compaction. She also pointed out that automation will likely save on labor costs as a machine can run 24/7, something that safety standards don't allow when a human is involved. And in markets where highly skilled farm labor is scarce or expensive, automation will likely offer additional savings.

More information about DOT Technology is available on their website at seedotrun.com. ■



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JAMIE BARKER, TERRAVION USE PLANES TO IMAGE FARMERS' FIELDS

By Kevin Gaffney

Many Eastern Washington farmers grow up working on their family farms, and other than attending a regional college or trade school, they never really leave home.

That is not the case with **Jamie Barker**, Pacific Northwest Region vice president for TerrAvion, a subscription-based aerial imaging company serving agriculture.

Barker grew up working on the family farm near Connell and later returned to help manage it for several years. But he is not one of those “stay close to home” farmers. After graduating from Connell High School in 1988, he headed across the nation to attend The Citadel, a military school located in Charleston, S.C.

“It was a bit of a culture shock living and studying there for four years,” recalled Barker. “However, Charleston is a wonderful city, and The Citadel is a great institution. It was an incredible experience. I made lifelong friends during my time there.”

Barker completed his B.S. in business administration and earned a commission in the U.S. Army as a second lieutenant. Upon finishing his Army stint, he joined the Army Reserves.

“My first assignment was as an armor officer,” said Barker. “After completing that, I came back to Connell and worked on our farm for several years. Then I was offered a position with Logan-Zenner seeds. I was based in Abbotsford, B.C., and worked with vegetable growers.”

It was during this time that Barker was activated by the reserves, interrupting his civilian career. He was assigned to civil affairs, which included everything from helping move people away from dangerous war zone areas to directly assisting foreign populations with economic development, establishing governmental institutions and upholding the rule of law.

Interestingly, one of his assignments was nearly a year of working with farmers in the Babil Province in Iraq, an area considered to be the “Cradle of Civilization.” He worked with local Iraqi farmers to solve salinity problems in their soils by cleaning up the water drainage canals from their irrigation fields.

“They grew a little bit of everything there,” explained Barker. “They raised date palms, corn, wheat and many other crops. The region has a long, temperate growing season and plenty of irrigation water from the Euphrates River.

“They have an adage over there, ‘Iraqis will never starve because we have the date palms.’ It is very much a staple crop for the region.”



Barker was based in Al Hillah, where the U.S. maintains a regional embassy.

“I can’t say I totally enjoyed it, because there were rockets and mortars flying around in the area. I didn’t encounter any IED explosives, thank God. I must say that it was a true pleasure to get home safe and return to a more normal life. I really did enjoy working with the farmers, though. I think farmers all around the world have a lot in common with each other.”

Barker had another stint overseas, serving in Kuwait. Soon after he arrived, doctors discovered that he had cancer. Fortunately, he received excellent care from the military doctors and has been cancer-free since then.

Once Barker returned from that deployment, he worked with CropLogic, a global ag technology company based in New Zealand. They work with growers raising irrigated crops, using hardware and software to develop data analysis to provide information on fertility and irrigation recommendations. Barker worked with them until 2012.

Barker retired from the reserves in 2016 with 24 years of service. ►



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Following his employment with CropLogic, Barker went to work for SVZ, a global fruit and vegetable processing company with locations in central Washington.

"I contracted with growers of apples and other fruits to produce products to make juices, purees and other products. It was enjoyable working with the growers. I was with SVZ for about five years before joining TerrAvion about one year ago."

TerrAvion is a company that provides high quality imaging maps of agriculture. They also provide the tools to help farmers use crop images and data to operate their farms more efficiently. TerrAvion was founded in 2013 by Robert Morris and Cornell Wright. Morris had served in Afghanistan in the U.S. Army's first drone platoon. This imaging experience and knowledge was the base from which TerrAvion was formed.

After returning from his service, Morris wanted to start a business. He began by talking to farmers about their operations, and what they needed to operate more efficiently. Several growers mentioned that they had a lot of satellite images but didn't really know what to do with them. This sparked the idea to start a company to work with imagery and data for agricultural operators.

Once a business plan and initial investment funds were taken care of, the company was launched. Beginning in California working with high value crops, they have since expanded into the Midwest, the Mississippi Delta, Florida and Brazil, as well as the Pacific Northwest.

Barker joined TerrAvion in January 2018. His territory

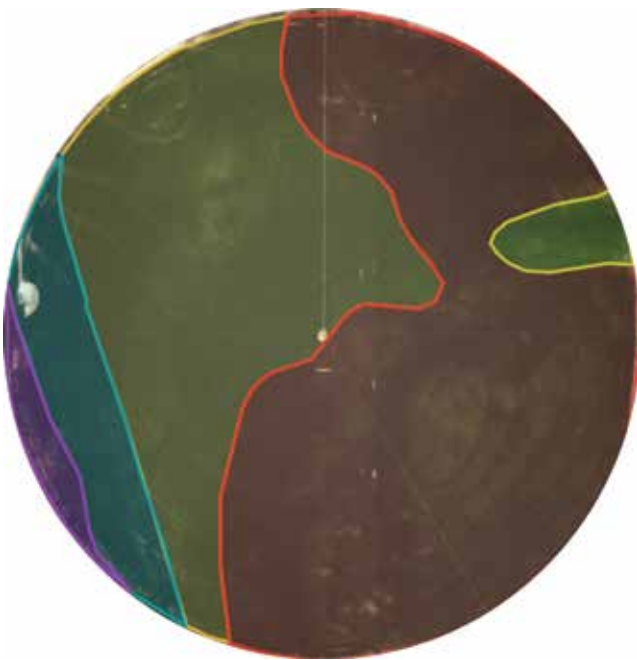
is Oregon, Washington and Idaho. They may expand his territory into Canada. TerrAvion owns no airplanes. They contract with regional flight providers and flight schools. TerrAvion works with them on flight plans that target the areas they need to image.

TerrAvion designs and installs the camera-sensor systems on the planes. There are also computers and hard drives on the planes. Images are taken every two seconds. The image files are sent to India or South Africa for verification. There is a 12-hour turnaround on the images, so growers receive them promptly.

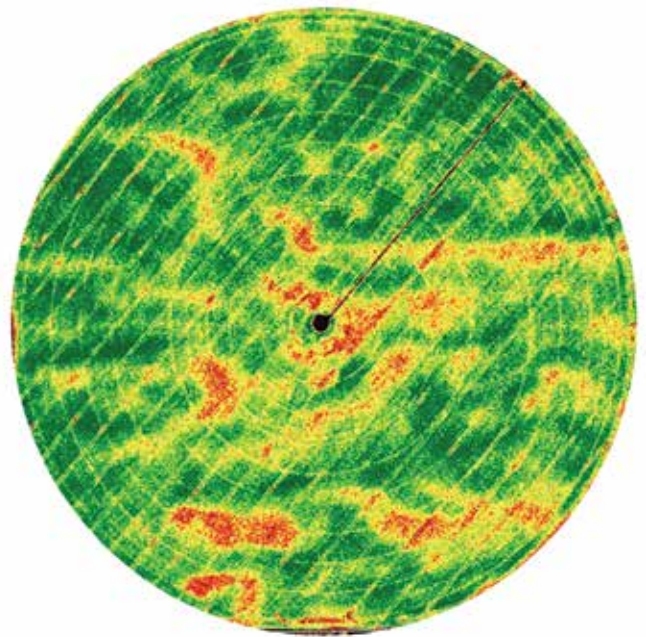
When asked why they use airplanes, Barker has some convincing answers about why it makes good sense.

"The images we provide are much more detailed than standard satellite images. There really is no comparison," he explained. "And most farmers really don't have the time or the expertise to operate drones over all their farm properties. Drones have to be flown over every individual field, which is time consuming. There are also a lot of regulations to be followed. Our imaging services cover a much wider area with excellent detail, and the farmer doesn't have to spend any time collecting the images or the data we provide for them.

"We have various packages that provide a specific number of image deliveries depending upon the farm type and what crops are being grown. We service most commodities and have had good success with potatoes, corn, wine grapes and fruit orchards. We want to expand into dryland grain production as well.



This image shows a field broken into fertility zones to attain higher yields and fertilize and seed more efficiently to help limit input costs. Photos courtesy of TerrAvion



This NDVI images details the vigor of the crop plants in the field. Growers can use this imagery to identify problems with plant diseases or weeds in a timely manner for the grower to efficiently manage.

"What we really concentrate on is taking the complexity out of ag imaging and mapping data so the average grower can spend their time more efficiently managing their farming operation."

The imagery provided by TerrAvion has four layers: actual color, infrared, NDVI (plant vigor) and thermal.

"The images can help spot insect or weed problems. It tracks the growth of the crop so problems can be spotted much earlier," Barker said. "For irrigators, if part of the system is not operating properly, we can spot it long before the grower would see a problem in the field. For dryland growers, we can identify a disease, pest or growth problem before it would be apparent to the naked eye."

Barker said the favorite part of his work is being able to help growers make better management decisions and increase yields while holding down input costs.

"We have a dryland wheat package which provides the grower with five image deliveries over the growing season. We also augment those high-detail images with additional satellite images for the growers to use in planning."

TerrAvion works with regional ag fertilizer-chemical suppliers to help market their services, including Ag Enterprise Supply and The McGregor Co.

To find out more about TerrAvion, Barker can be contacted at Jamie@terravion.com or you can find the company online at terravion.com. ■




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Rail funding finalized

\$5.6 MILLION BUILD GRANT WILL HELP STABILIZE WASHINGTON'S PCC SHORTLINE RAIL

By Trista Crossley

For the state-owned Palouse River and Coulee City (PCC) Shortline Rail in Eastern Washington, the path to a well-maintained, stabilized system just got a little smoother.

In December, the U.S. Department of Transportation announced that \$1.5 billion in discretionary grant funding would be awarded through the Better Utilizing Investment to Leverage Development Transportation Discretionary Grants Program—otherwise known as BUILD grants. The PCC was one of 91 projects nationwide



Ron Pate, director of rail, freight and ports, Washington State Department of Transportation

to be awarded a BUILD grant; it will receive \$5.6 million, which will be matched with \$5.6 million of state and private funding. The money will be used to replace or rehabilitate approximately 10 bridges, replace about 4.5 miles of rail and rehabilitate nearly 16.3 miles of track. The repairs will increase operating efficiency on the shortlines by allowing heavier freight cars to be moved faster.

"The Department of Transportation statewide could submit only three grants," said Ron Pate, the Washington State Department of Transportation's (WSDOT) director of rail, freight and ports. The project proposals weren't limited to rails, but could include any transportation project. "In a department as big as we are, with as many road miles, bridges, airports and infrastructure projects as we have, the secretary of transportation decides which three grants get submitted. The secretary supported this project wholeheartedly. He understands the PCC moves a lot of wheat, which is very important to the east side of state. We wanted to make sure that as a transportation organization, we weren't just looking at highways."

WSDOT is in the process of developing a construction plan using the grant money, and Pate said they hope to begin work on the PCC this summer. However, if the government shutdown continues, it could cause delays in

getting the paperwork signed.

A BUILD grant was also awarded to an infrastructure project in Spokane County that will support a new warehouse and distribution facility by building a roundabout, making lane improvements, extending shoulders and adding streetlights and a shared-use pathway. That project received \$14.3 million.

To help match the PCC BUILD grant, private companies, including the Washington Association of Wheat Growers, pledged almost \$350,000, while the state kicked in \$5.3 million. Nearly 40 PCC users, operators, ports, associations and localities wrote letters of support. WSDOT also worked with Washington's congressional delegation to garner support for the grant proposal.

"We are doing the right things here. We are leveraging money we had to support the economy. I think it really resonated and was a message that was well received," Pate said.

The state acquired the first part of the PCC in 2004, and the rest by 2007. In all, the track stretches 298 miles and serves five Eastern Washington counties: Adams, Grant, Lincoln, Spokane and Whitman. WSDOT contracts with private companies to operate the three branches of the PCC. WSDOT oversees the facilities and regulatory portions of the operating leases and is responsible for most of the capital projects done on the system. The operators are responsible for the basic track maintenance, such as tie replacement, weed control and signage.

In 2017, the PCC moved almost 12,000 rail cars through the system, about 2,500 more from the year before. More than 20 percent of Eastern Washington's wheat crop is moved on the PCC shortlines each year.

When the state acquired the PCC, it was in sad shape, both physically and in terms of profit. That's not surprising, Pate explained, since historically, the Class 1 railroads "...didn't give these routes up because they were profitable; it was because they couldn't maintain them anymore." WSDOT has been trying to get ahead of the PCC's maintenance needs since it acquired the system. Pate said the money from the BUILD grant will be a big step forward in that effort and will help the state better meet shippers' needs.

"This will decrease their costs and decrease what it takes to maintain the system. We want the operators to make a profit and move their products efficiently," he said. ►

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Pate said the overall state of the PCC right now is fair.

"It needs improvement, that's why we are going after all the funding we can. We want to also look at how we can get more shippers on the lines. If we can expand the shipper base, that will better support the operators, which means they're going to have more money for maintenance. Once the system is stabilized, grant money gets put into upgrades instead of maintenance," he explained.

In 2015, the PCC released a 10-year strategic plan that identified three key goals:

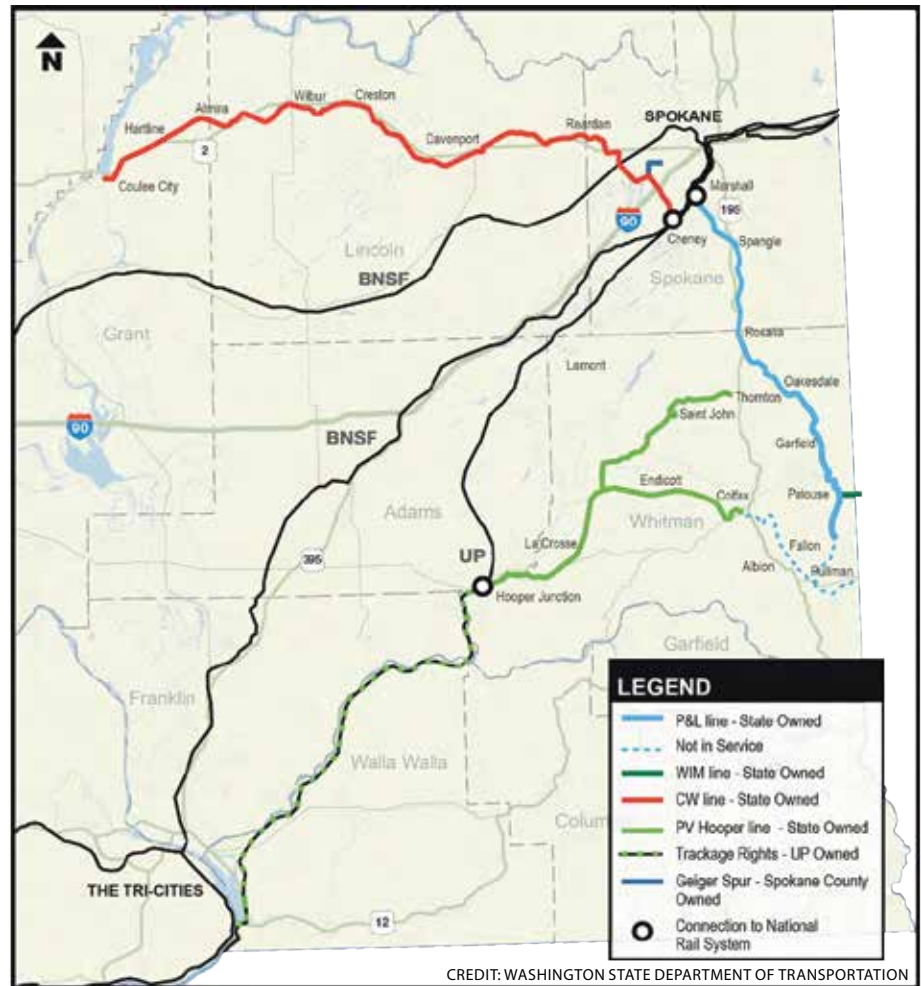
- Safe operations;
- Efficient operations; and
- Economic development.

According to Pate, while WSDOT is achieving those goals with the funding they have, the BUILD grant money will accelerate progress.

"Every department of transportation has plans. We are a multimodal agency, always looking for opportunities to move products and people. The plan is the plan, but if something happens that means we need to make changes, we need to be flexible and change it. A good plan is one that is used and updated to address real needs."

Looking ahead, Pate sees a promising future for the PCC.

"I think people see the value in the system. It is supporting the Washington economy. It is something that is truly a business opportunity. Lots of time in state departments of transportation, we focus on



how to 'build this highway from here to here.' (The PCC) is truly a business. We have to look at commodities, shipments. We have to strategize from a business point of view, and we are showing the Legislature and federal officials that we are actually doing that." ■

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2018 Tri-State Grain Growers Convention Photo Contest
Winner, Judy von Borstel, from Grass Valley, Ore.



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By Gary Bailey



Advancements in agriculture continue to evolve at a rapid pace. New gene-editing technologies available to wheat breeders show great promise in advancing our wheat varieties. Crispr Cas9 is one of the new editing technologies. The challenge I see is keeping the new technologies from being confused with GMO technology.

Wheat farmers and landlords understand that there is no commercially GMO wheat available. Back in the early 2000s, Monsanto was poised to release a Roundup Ready wheat which would have added our favorite crop to the list of those that have been genetically engineered. The company wound up shelving the technology for a host of reasons, but I'm sure input from farmers, as well as the attitude of our Asian customers, played a role. All wheat is GMO-free and is likely to stay that way, not because the technology is evil, but because the new gene-editing technology has come along to replace it.

Labeling the absence of GMO contents in products is currently being used as a marketing strategy. I could understand the interest in eating GMO-free food if there had been a single instance when doing so had caused injury to a consumer. But since the first GMO crop was introduced in 1996, there has not been a single such occasion. Yet many consumers still don't trust the science.

Crispr Cas9 is a new gene-editing technology that has great potential. It will allow scientists to change the gene sequence more efficiently than traditional breeding. I could attempt to further explain how it works, but this type of science isn't in my wheelhouse. You're better off Googling the term, which is short for "Clustered Regularly Interspaced Short Palindromic Repeats." Basically, with the ability to cut and paste genetic information, the technology has the potential to transform agriculture—and human health.

They say you never get a second chance to make a good first impression, but in the case of revolutionary technology, agriculture has a second chance. We're off to a good start. Back in March 2018, U.S. Department of Agriculture (USDA) Secretary Sonny Perdue announced that the USDA had ruled the Crispr technology is not a GMO and doesn't need to be regulated as such. Crispr Cas9 does not insert foreign DNA into the genome of the plant or animal, where the GMO process does,

which is why it is nonregulated.

This is huge, given that it's estimated each new GMO cost \$35 million just to clear regulatory hurdles. With that kind of price tag, only the largest companies have been able to introduce GMOs, which is ironic, because one of the complaints of organizations opposing them is the fact only large companies have the money to get in the game. The Crispr technology is very inexpensive, in the thousands of dollars instead of millions, which should lead to greater innovation.

Crispr Cas9 is already transforming the biotech industry. A company based in Minnesota, Calyxt, has a portfolio of products it's developing, including a high fiber wheat, a reduced-gluten wheat and a powdery mildew resistant wheat—and wheat is not their major crop! Crispr Cas9 will also be used to increase heat and drought tolerance. The sky's the limit. Closer to home, Boise-based Simplot recently received permission to begin working with Crispr Cas9 for future potato releases.

Of course, not everyone agrees. Across the Atlantic in the European Union, the judgment on gene editing is exactly the opposite. There, the EU's highest court ruled the technology should be subject to the same stringent regulations as conventionally modified GMOs. You can bet that antibiotech groups in the U.S. are watching with interest.

One thing I have learned watching the GMO process unfold is that having science on your side is not enough. Communication is key, and certainly that was where Monsanto went wrong when it released the first Roundup Ready corn 22 years ago. It appears that Crispr Cas9 is a gene-editing process with total transparency, which should help alleviate the doubts of the consumer. We want to feed people, not use the technology under a shroud of mystery.

Academic institutions and private companies are leading the Crispr Cas9 research revolution in agriculture. We have so many wheat challenges that we have been nibbling around the edges of for a long time, with more coming, especially in the way of consumer acceptance and labeling. I'm hoping gene editing will allow us to make headway, but education will be key. We have the knowledge. With consumer and customer acceptance, it's time we use the technology to take wheat to the next level. ■



A world where the U.S. and Russia can play

By Scott A. Yates

Vince Peterson may be the organization's president and Mark Fowler it's vice president of overseas operations, but when it comes to the voice of U.S. Wheat Associates (USW), that would be **Steve Jon Mercer**, a veteran of agricultural fields that have nothing to do with farming.

Although Mercer grew up in a small northern Illinois town and worked on farms as a youth, he understood early on that farming was not in his future. Luckily, for folks like Mercer, many state colleges have agriculture journalism degrees, one of which Mercer received from the University of Illinois. He has worked for several firms associated with agriculture over his career, since 2006 for USW.

Mercer and I are part of the old guard who came into agriculture's backdoor as young men—and survived—no small matter in an industry that has consolidated enormously during our nearly 40-year association with it. I always enjoy running into Mercer at the meetings we both attend. At the 2018 Tri-State Grain Growers Convention in Portland, he recorded a podcast with me.

For those who are unaware of the Wheat All About It! podcast sponsored by the Washington Grain Commission (WGC), a brief aside. The podcast entered its third year in January with more than 100 podcasts recorded. You can find all the podcasts on the WGC website at wagrains.org by clicking on the summary link at the bottom of the page below the podcast's logo. You can also subscribe on numerous podcast platforms including iTunes and Stitcher. Mercer's podcast, episode 107, entitled "U.S. Wheat Spokesman Speaks of Wheat and Wheat's Future," was posted on Jan. 8.

What follows is a partial transcript of our podcast conversation, partly as a way for Mercer's message to get a wider audience, but also to help steer those who have



yet to listen to the Wheat All About It! podcast, to follow up by listening to our complete conversation.

YATES: If you stay in an industry long enough, you can see market forces work in real time. U.S. Wheat Associates closing their Cairo, Egypt, office several years ago and their Moscow office in 2018 are obvious casualties of resurgent Russian wheat production and exports. But you'll hear Mercer express frustration with the world media, not to mention the world grain industry's focus on Russia, the country called, The Bear. I began my conversation with Mercer by asking him whether it matters which country exports the most wheat?

MERCER: The frank answer is that production is shifting. New countries, particularly Russia, have done extremely well the last few years. When you think about the fact that Russia went 30 years ago from a 15 million metric ton importer of wheat, to last year exporting 40 million metric tons, that is a huge change, so they've certainly had an influence. The media generally plays that up so we hear a lot about it. But as we look ahead to opportunities in the world, we think that we're going to have a place where U.S. wheat can play, and Russia and other countries are going to have a place where they can play too.

YATES: You just said that Russia exported 40 million metric tons of wheat. I believe the U.S. exported 24 million tons of wheat during the same time period. What does that mean in terms of revenue coming to the farmers?

MERCER: Well, that's really interesting. I mean the U.S. has a reputation for being a high quality supplier of wheat. It doesn't matter whether you're talking about soft white wheat or hard red spring or hard red winter, durum, etc., it's all excellent quality, and that quality actually brings a premium in the marketplace. So you mentioned Russia exported almost twice as much wheat as the U.S. last year, and yet in terms of value, the U.S. is still generating greater value for the 24 million metric tons compared to Russia's 40. I think that's a two-edged sword because that means Russians are selling their wheat for a much lower price generally. I think unfortunately right now in the world, Russia is really setting the floor for wheat prices in general in the world.

YATES: Are we talking too much about Russia? And by that I mean are we missing the forest for the trees, and if we are, what's the forest?

MERCER: I'm tired of Russia. I am. I am tired of them winning in many ways—Russia doubling exports, Russia doubling production. Russia, Russia, Russia. It's just constant. But when we look ahead, and Vince Peterson, our president, has taken a pretty hard look at this, 81 percent of what Russia sells is now sold into Africa and North Africa and the Middle East. When we look out 20 to 30 years, there's a dramatic need for wheat increasing in those areas because that's where the population is growing the fastest, and they're always going to be looking for lower cost wheat. These countries don't necessarily need the kind of quality that we provide, the spring wheat, soft white and other classes. But somebody is going to have to meet that need because they're not going to be able to grow all the wheat they need. So it's a huge market that's going to grow fast, and Russia is going to be pretty busy filling that need.

Now, on the other hand, look at our markets. We have two major port areas, the Pacific Northwest here, of course, and out of the Gulf. We look at Latin America as another market that's growing for us, a high quality market. A lot of different classes of wheat are needed there. And South Asia as well. We're in a good position in the area where we feel we can compete best. Fortunately, it's also areas where folks like the quality, and they're willing to pay more for it.

YATES: I'm going to push back a little bit here on you, Steve. Of that 40 million metric tons that Russia exported, 12 million metric tons went to Asia in the 2017/18

marketing year. Could we look at that and say this is just the beginning?

MERCER: I think you have to look at it as a kind of a snapshot of the current economic situation. There are many factors at work here. An interesting one and a lot of folks probably don't realize this, but Indonesia is actually closer in sailing miles from the Russian ports than it is from the Pacific Northwest, so it actually is a shorter route from Russia to Indonesia, so that's always going to be a battleground. You also have Australia competing there as well, and they're vertically integrated there. They own a lot of mills. The other factor that's happening is low freight rates. There was a huge overbuilding of large bulk vessels that took place back when we were selling a lot, and everybody said we needed more when the economy was good. So they built a lot of ships. Well, that's starting to change now. The freight rates have started to come up. It's gonna be harder for Russia to compete in those farther-away markets compared to those markets that we can serve. And again, that demand locally is going to keep them pretty busy.

YATES: You mentioned the word quality, Steve, and in the Northwest of course, we talk a lot about quality, but I've also heard millers say that they can make almost any wheat perform. Obviously, the wheat that Russia exports was milled and made into products. Is quality really being hyped?

MERCER: I don't think so. I think when we look at what's happening in South Asia, for example, the economic difference there in incomes for these people—all of a sudden they're starting to eat on-the-go-food. They're starting to eat cookies and crackers and even having pastries. Euromonitor, for example, just recently came out with a report that showed that the greatest increase in pastry consumption is in South Asia and China. Their tastes are changing. Their desire for higher quality is changing. I actually was just in Nigeria. Now, Nigeria is a market where the Russians are doing really well because price is a big factor, but it's not the only factor. The millers there said the consumers, even though they're only living on two or three dollars a day, their tastes are changing. They know the difference between quality, so they understand that difference. We're going to see the desire for higher quality increase.

Mercer is a wealth of knowledge, and there's more where this came from. The preceding transcript is about one-third the length of the episode 107 podcast entitled, "U.S. Wheat Spokesman Speaks of Wheat and Wheat's Future." Join the Wheat All About It! family and access the rest of my conversation with Mercer by going to the WGC website at wagrains.org and downloading the entire episode. ■

Very good, but not great 2018 spring wheat yields

By Aaron Esser

As most of you already know, Ryan Higginbotham left his position as director of the Washington State University (WSU) Variety Testing Program (VTP) last fall to work for HighLine Grain. I was appointed interim director of the VTP early last spring.

I need to thank Ryan for having organized a smooth transition and for making sure spring planting could proceed without delay. I also want to thank the VTP crew, most notably Vadim Jitkov and Andrew Horton, for all their hard work during the year. They did a terrific job!

In 2018, the VTP had 18 spring wheat nurseries across five precipitation zones. Overall spring wheat yields were up over the previous year mostly because weather conditions allowed for more timely planting. Although the summer was dry, temperatures were relatively mild compared to the previous year. The first nursery was seeded at the WSU Lind Dryland Research Station on March 13, and the last nursery was seeded at Fairfield on May 4.

The spring wheat trials consisted of 36 hard wheat and 24 soft white entries from all major wheat breeding programs in the Pacific Northwest. In the hard wheat trials, 61 percent of the entries were commercial cultivars, and 39 percent of the entries were experimental lines. In the soft white trials, 54 percent of the entries were commercial cultivars, and 46 percent of the entries were experimental lines. Table 1 summarizes the commercial soft white and hard wheat cultivars across the irrigated, greater-than-20-inch precipitation and 16-to-20-inch precipitation zones. Table 2 summarizes the commercial soft white and hard wheat cultivars across the 12-to-16-inch and less-than-12-inch precipitation zones.

Results from all locations are presented with trials having CV (coefficient of variation) within an acceptable range. It was interesting to note that all four locations within the 12-to-16-inch precipitation zone in both the soft white and hard wheat nursery had elevated CVs.

There were no first-year soft white entries in 2018, but there were four new hard wheat entries: WB9717, WB9879CLP, WB7202CLP and Soft Svevo, a durum type. WB9717 is a traditional hard wheat, and WB9879CLP and WB7202CLP are both two-gene Clearfield varieties. WB7202CLP was very competitive with the top yielding hard wheat cultivars across precipitation zones and should be a very positive fit within a Clearfield cropping system. Soft Svevo is a unique variety as it is a soft durum spring wheat from the director of the Western Wheat Quality Lab, Dr. Craig Morris.

So how should a farmer use this data? As an educator, I get apprehensive talking about a variety with only a single year of data because what are the chances that 2019 will have growing conditions similar to 2018? I suggest looking at the two-year average yield as a

Table 1. 2018 WSU Extension Spring Wheat

Precipitation Zone=Irrigated							
VARIETY	MOSES LAKE	PASCO	AVERAGE YIELD	2-YR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN	
SOFT WHITE	---Yield (Bu/A)---			Lb/Bu	%		
	WB6341	164	94	129	125	62.5	11.5
	Tekoa	158	76	117	123	61.6	12.8
	Ryan	140	86	113	113	61.4	12.9
	WB6121	147	75	111	117	62.6	13.8
	Seahawk	140	79	110	106	61.6	12.9
	Whit	144	72	108	109	61.1	13.4
	Melba	139	73	106	111	59.2	12.0
	Louise	127	80	103	101	59.9	12.3
	SY Saltese	134	69	101	105	59.3	12.9
	CV %	6	8	7	8	2	3
	LSD (0.05)	12	8	7	6	1.0	0.3
	Average	144	78	111	112	61.0	13.0
	HARD RED SPRING	---Yield (Bu/A)---			Lb/Bu	%	
Dayn ³		165	76	121	129	62.3	14.7
SY Gunsight		152	88	120	125	61.8	14.4
SY Renegade (06PN3017-09)		155	83	119	118	61.8	14.2
LCS Iron		154	79	117	121	61.4	14.4
SY Basalt		152	81	116	115	60.7	14.7
Glee		147	85	116	109	62.7	15.0
SY Coho		149	73	111	110	59.9	15.5
WB7202CLP		153	69	111	-	62.9	14.5
WB9717		147	74	110	-	63.5	14.5
WB9668		141	74	107	111	62.3	16.8
WB9350		144	69	107	111	60.9	14.9
LCS Buck Pronto		135	77	106	111	61.8	16.2
WB9518		139	72	105	115	61.7	16.2
WB9662		147	63	105	115	61.2	16.2
Alum		140	67	104	104	61.7	15.5
LCS Luna		138	63	100	108	61.9	14.8
Soft Svevo ²		142	55	99	-	60.1	16.0
CV %		5	8	6	6	1	3
LSD (0.05)	9	8	6	4	0.5	0.4	
Average	147	73	110	114	61.7	15.2	

¹Club Wheat

²Soft Durum Wheat

³Hard White

start and then consider other factors that go into selecting the correct variety that includes test weight, protein and quality ranking. Remember, if you have two similar varieties

at Variety Trial Summary

Precipitation Zone=>20"									
VARIETY	FAIRFIELD	FARMINGTON	PALOUSE	PULLMAN	AVERAGE YIELD	2-YR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN	
	-----Yield (Bu/A)-----						Lb/Bu	%	
Ryan	69	102	102	103	94	81	59.1	9.8	
Tekoa	68	100	108	91	92	80	60.9	10.0	
Seahawk	63	91	102	99	89	78	60.0	10.6	
Melba ¹	60	94	99	91	86	74	59.2	9.7	
Louise	65	94	101	78	85	74	59.4	9.8	
JD ¹	62	92	90	92	84	73	60.7	10.4	
Diva	61	93	102	78	83	74	59.4	10.1	
Whit	69	92	86	83	83	75	59.8	10.2	
WB6341	70	93	84	76	81	74	59.0	9.4	
WB6121	62	82	93	86	80	72	60.9	11.2	
Babe	64	91	81	73	77	71	59.4	9.5	
SY Saltese	54	82	86	75	74	68	60.0	10.1	
WB-1035CL+	59	78	75	56	67	64	58.3	11.2	
CV %	6	4	8	5	6	6	1	4	
LSD (0.05)	5	5	10	5	3	2	0.5	0.3	
Average	64	91	93	83	83	74	59.7	10.2	
	-----Yield (Bu/A)-----						Lb/Bu	%	
Dayn ³	57	88	87	94	90	-	60.8	11.7	
Glee	57	86	91	86	88	76	60.8	12.2	
SY Renegade (06PN3017-09)	65	84	88	89	87	77	60.1	12.1	
WB7202CLP	53	81	91	88	87	-	60.7	11.7	
LCS Luna	47	76	86	92	85	73	60.3	12.8	
SY Gunsight	51	82	86	87	85	74	59.7	11.9	
LCS Iron	49	80	88	85	84	76	59.2	12.1	
SY Selway	47	79	86	85	84	72	60.2	12.3	
Hollis	53	86	85	76	82	71	60.1	13.1	
WB9717	49	77	84	83	82	-	61.5	12.4	
Chet	52	81	80	83	81	74	61.9	12.6	
Alum	46	86	80	78	81	73	60.6	12.3	
WB9350	53	76	85	82	81	70	58.8	12.3	
SY Coho	46	75	83	80	79	68	57.9	12.7	
LCS Buck Pronto	51	71	79	82	77	69	60.3	13.2	
WB9518	50	65	81	83	76	67	59.7	13.6	
WB9668	54	75	71	77	74	64	60.8	14.1	
Kelse	53	72	75	75	74	68	59.8	13.3	
Soft Svevo ²	51	71	71	78	73	-	60.0	12.7	
SY605 CL	45	74	69	73	72	65	61.8	13.2	
WB9879CLP	50	69	68	76	71	-	59.7	13.1	
WB9662	41	59	73	71	68	60	58.8	14.2	
CV %	13	6	10	6	8	7	1	4	
LSD (0.05)	9	7	11	7	5	3	0.5	0.4	
Average	51	77	81	82	80	70	60.2	12.7	

Precipitation Zone=16-20"									
VARIETY	DAYTON	MAYVIEW	PLAZA	ST. JOHN	WALLA WALLA	AVERAGE YIELD	2-YR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	-----Yield (Bu/A)-----							Lb/Bu	%
Ryan	63	68	79	102	89	80	69	61.0	10.0
Tekoa	51	68	85	104	81	79	67	62.0	9.7
Louise	60	67	83	104	82	79	67	60.8	10.0
WB6341	60	68	79	99	84	78	66	61.2	9.3
Whit	56	67	77	100	85	77	65	61.1	10.1
Seahawk	53	71	74	97	87	76	67	61.1	9.8
Diva	55	65	77	94	84	75	65	60.7	9.8
Melba ¹	59	71	78	100	63	74	64	60.5	9.7
Babe	51	67	69	100	77	73	63	61.2	9.9
JD ¹	57	68	73	93	68	72	61	61.8	10.5
WB6121	55	63	65	89	77	70	61	61.9	11.2
SY Saltese	50	60	75	95	65	69	59	61.0	10.0
WB-1035CL+	53	61	60	85	75	67	58	60.3	11.5
CV %	7	9	6	5	3	6	6	1	7
LSD (0.05)	5	8	6	7	4	3	2	0.5	0.4
Average	56	66	75	97	78	75	64	61.1	10.1
	-----Yield (Bu/A)-----							Lb/Bu	%
WB7202CLP	51	70	73	84	84	72	-	61.8	10.9
Alum	57	63	73	85	79	72	61	61.0	12.3
Dayn ³	48	67	78	84	76	71	-	61.7	11.3
SY Renegade (06PN3017-09)	51	66	72	81	79	70	61	61.1	12.0
Glee	56	65	73	74	80	70	61	61.8	11.6
SY Selway	51	59	68	88	80	69	59	60.4	11.9
LCS Luna	51	68	69	81	71	68	60	60.7	11.9
SY Gunsight	53	63	73	80	68	67	58	60.7	11.5
LCS Iron	54	64	70	81	66	67	61	60.4	11.3
Kelse	51	66	64	71	80	66	58	61.0	12.7
Chet	50	61	65	75	76	65	58	61.4	12.2
LCS Buck Pronto	49	57	63	73	74	63	55	60.4	13.1
Hollis	47	54	64	77	71	62	54	59.2	13.2
SY Coho	46	61	69	77	58	62	54	58.4	12.2
WB9350	49	60	64	78	59	62	52	59.4	11.9
WB9717	47	57	61	76	67	62	-	62.1	11.8
WB9518	46	61	59	81	58	61	53	60.1	13.8
SY605 CL	44	58	61	67	71	60	2	62.0	12.8
WB9879CLP	52	59	55	70	61	60	-	60.9	13.0
WB9668	43	56	60	67	69	59	51	61.1	13.4
WB9662	41	59	57	66	64	57	50	59.9	13.6
Soft Svevo ²	41	52	53	65	59	54	-	60.0	12.3
CV %	8	5	7	8	4	7	7	2	6
LSD (0.05)	5	4	7	8	4	3	2	0.6	0.4
Average	49	61	66	76	70	65	53	60.7	12.3

to choose from, choose the one with the better quality in order to preserve Pacific Northwest market share in the world.

Other factors that are very important to choosing va-

rieties include stripe rust resistance and Hessian fly resistance. Similar to 2017, Hessian fly damage was relatively easy to find at many locations and was the heaviest at the Walla Walla location. This data, as well as three- and

five-year average yields, can be found at the WSU Small Grains web-site at smallgrains.wsu.edu/variety. Additionally, the Variety Selection Tool (located on the wheat and small grains web-site) provides farmers with disease ratings (including Hessian fly), end-use-quality and a two-year average of agronomic traits from VTP locations within a given precipitation zone, to help choose which variety to plant.

Feel free to contact me with any questions or concerns at aarons@wsu.edu or (509) 659-3210.

Funding for the WSU Extension Uniform Cereal Variety Testing Program is provided by the Washington Grain Commission. Variety trials are made possible by the donation of land and time from farmer cooperators where the trials are located. ■

Table 2. 2018 WSU Extension Spring Wheat Variety Trial Summary

Precipitation Zone=12-16"									
VARIETY	ALMIRA	ENDICOTT	LAMONT	REARDAN	AVERAGE YIELD	2-YR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN	
SOFT WHITE	-----Yield (Bu/A)----- Lb/Bu %								
	Ryan	49	80	43	45	54	52	58.9	11.7
	JD ¹	55	71	46	42	53	50	61.1	12.0
	WB6341	51	79	42	40	53	52	60.5	11.1
	Diva	44	75	44	47	53	51	58.4	11.8
	Tekoa	46	74	41	46	52	50	60.8	11.8
	Whit	52	78	36	40	52	50	60.3	12.0
	Melba ¹	47	77	37	45	52	50	59.8	11.5
	Seahawk	43	76	38	47	51	50	60.4	11.9
	Babe	47	70	40	45	51	51	60.3	12.2
	WB6121	51	74	37	38	50	47	60.1	13.1
	Louise	42	65	45	48	50	50	58.4	12.0
	SY Saltese	43	70	37	41	48	47	59.3	11.8
	WB-1035CL+	44	66	36	35	45	44	58.0	13.1
	CV %	11	9	12	11	11	10	2	6
	LSD (0.05)	7	10	7	7	4	2	0.8	0.5
Average	47	73	40	43	51	50	59.7	12.0	
HARD RED SPRING	-----Yield (Bu/A)----- Lb/Bu %								
	LCS Luna	55	62	37	41	49	46	60.8	13.0
	SY Gunsight	57	64	31	42	49	46	60.9	12.8
	WB7202CLP	66	54	31	42	48	-	62.3	12.1
	Dayn ³	49	59	40	41	47	-	61.3	12.7
	Alum	53	59	32	44	47	46	60.8	13.7
	Glee	56	58	32	40	47	45	62.0	13.1
	LCS Iron	56	58	31	40	46	46	59.6	12.8
	SY Selway	52	56	34	42	46	45	60.5	13.1
	Kelse	57	53	32	41	46	42	61.1	13.7
	WB9350	52	55	33	41	45	42	59.7	13.3
	Chet	51	52	37	41	45	46	60.9	14.5
	SY Coho	50	55	37	39	45	44	58.5	13.3
	SY Renegade (06PN3017-09)	51	57	31	40	45	44	60.2	13.4
	Hollis	49	52	34	37	43	42	60.0	13.8
	LCS Buck Pronto	47	59	30	35	43	41	60.5	14.6
	WB9879CLP	51	48	34	33	42	-	59.4	14.6
	SY605 CL	53	51	28	34	41	40	61.7	14.3
	WB9717	50	53	21	38	40	-	61.7	13.1
	WB9668	57	44	21	34	39	37	60.4	15.8
WB9518	45	51	26	33	39	38	59.0	14.6	
WB9662	41	48	24	33	37	36	58.9	15.4	
Soft Svevo ²	36	39	13	28	29	-	58.2	13.8	
CV %	10	9	17	10	11	10	2	5	
LSD (0.05)	7	7	7	5	3	2	0.8	0.5	
Average	52	54	30	38	44	43	60.4	13.7	

Precipitation Zone=<12"									
VARIETY	BICKLETON	HORSE HEAVEN	LIND	AVERAGE	2-YR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN		
SOFT WHITE	----Yield (Bu/A)---- Lb/Bu %								
	Melba ¹	27	42	54	41	39	61.5	11.2	
	JD ¹	30	38	50	39	37	61.7	11.6	
	Louise	28	37	52	39	37	60.6	11.4	
	Tekoa	26	39	50	38	37	61.9	11.1	
	WB6341	29	38	48	38	37	60.8	10.9	
	Whit	29	37	48	38	36	60.6	11.4	
	Diva	25	35	51	37	36	60.8	11.8	
	Babe	28	39	44	37	35	61.4	11.3	
	WB-1035CL+	27	38	44	36	35	61.5	12.2	
	WB6121	29	35	44	36	35	61.9	12.1	
	Ryan	28	35	45	36	36	60.7	11.6	
	Seahawk	21	40	46	36	35	61.8	11.4	
	SY Saltese	27	32	46	35	36	61.4	11.4	
	CV %	8	10	5	8	8	1	5	
	LSD (0.05)	3	5	4	2	2	0.7	0.4	
Average	27	37	48	37	36	61.3	11.5		
HARD RED SPRING	----Yield (Bu/A)---- Lb/Bu %								
	LCS Iron	24	38	46	36	36	61.7	13.3	
	LCS Luna	29	34	45	36	34	61.8	13.4	
	Alum	26	36	46	36	34	62.8	13.5	
	SY Gunsight	25	35	46	36	34	61.9	13.2	
	SY Renegade (06PN3017-09)	24	37	44	35	34	61.1	13.4	
	WB7202CLP	29	33	42	35	-	62.3	12.7	
	Glee	27	33	43	34	33	62.7	13.4	
	Dayn ³	26	34	43	34	-	62.2	13.7	
	Chet	25	32	45	34	33	63.1	14.5	
	SY Coho	23	34	44	34	33	59.5	14.0	
	SY Selway	26	32	40	32	33	60.6	13.8	
	SY605 CL	27	30	39	32	30	62.4	14.7	
	WB9717	22	30	43	32	-	63.4	13.4	
	Kelse	24	34	38	32	31	62.4	14.7	
	Hollis	27	30	38	31	30	62.1	14.0	
	WB9879CLP	25	34	34	31	-	61.5	14.6	
	LCS Buck Pronto	25	27	38	30	30	61.6	14.7	
	WB9668	25	29	34	30	29	62.7	15.5	
	WB9350	25	29	32	28	29	61.1	14.1	
WB9662	16	32	34	27	28	61.9	15.3		
WB9518	19	29	33	27	27	61.2	15.4		
Soft Svevo ²	22	21	29	24	-	61.6	14.4		
CV %	10	9	6	8	8	1	4		
LSD (0.05)	3	4	3	2	2	0.6	0.4		
Average	25	32	40	32	32	61.9	14.1		

¹Club Wheat ²Soft Durum Wheat ³Hard White

Table 3. 2018 WSU Extension Spring Barley Variety Trial Summary

Precipitation Zone=>20"									
VARIETY	FAIRFIELD	FARMINGTON	PALOUSE	PULLMAN	AVG. YIELD	2-YEAR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN	
FEED	-----Yield (Bu/A)-----				Lb/Bu		%		
	Altorado	4410	6510	6550	4820	5570	5130	50.1	10.2
	Muir	4330	6570	6800	4430	5540	4900	51.6	10.0
	Lenetah	3860	6540	7290	4170	5460	4930	52.4	9.9
	Claymore	3640	6320	7060	4380	5350	4710	52.4	9.9
	Lyon	4060	6850	6120	4090	5280	4760	50.6	10.0
	Oreana	4250	6580	6260	3940	5260	4710	50.0	10.1
	Champion	4160	5910	6200	4120	5100	4580	52.6	9.7
	LCS Vespa	3850	5610	6360	4120	4980	4640	49.4	10.5
	Survivor	3160	5650	5660	3840	4580	4450	51.4	11.0
MALT	LCS Opera	4600	7110	6770	4530	5750	-	49.8	9.8
	LCS Sienna	4260	6530	6900	4350	5510	-	51.0	9.9
	LCS Odyssey	4070	6460	6910	4560	5500	4710	49.6	10.0
	LCS Genie	4290	6590	6390	3780	5260	4690	51.1	10.2
	CDC Copeland	3770	5860	5850	3500	4750	4000	49.3	10.4
	Havener ¹	3540	5820	6000	3240	4650	4110	56.1	11.0
	Meg's Song ¹	3360	5450	5590	3340	4440	-	54.6	12.2
	CV %	7	6	11	14	10	11	2	5
	LSD (0.05)	380	530	990	780	350	250	0.7	0.4
	Average	3976	6273	6419	4076	5186	4640	51.4	10.3

Precipitation Zone=16-20"									
VARIETY	DAYTON	MAYVIEW	ST. JOHN	WALLA WALLA	AVG. YIELD	2-YEAR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN	
FEED	-----Yield (Bu/A)-----				Lb/Bu		%		
	Altorado	4200	4780	5120	5790	4970	4270	51.0	10.9
	Claymore	4060	4620	5620	5550	4970	4200	51.5	10.9
	Lyon	4000	4880	4960	5900	4940	4300	51.7	11.0
	LCS Vespa	3870	5040	4670	5930	4880	4350	51.5	10.9
	Lenetah	3910	4730	5180	5780	5720	4360	53.6	10.6
	Muir	4000	4340	5270	5760	4840	4150	52.1	10.6
	Champion	4000	4500	4720	5990	4800	4290	54.4	10.4
	Oreana	3740	4700	4820	5700	4740	4100	52.2	10.8
	Survivor	3500	3650	4500	4990	4160	3690	52.0	11.8
MALT	LCS Opera	4320	5360	6260	6180	5530	-	51.6	10.3
	LCS Sienna	4200	5030	4910	6050	5050	-	53.3	10.2
	LCS Genie	3700	4820	4760	5530	4700	4120	52.3	10.4
	LCS Odyssey	3720	4670	4560	5400	4590	3970	50.9	10.8
	CDC Copeland	3480	4020	4490	5290	4320	3590	48.9	10.8
	Havener ¹	3310	3690	4430	4860	4070	3600	56.7	11.7
	Meg's Song ¹	2800	3560	3710	4790	3720	-	53.7	13.1
	CV %	7	6	10	4	7	8	2	5
	LSD (0.05)	350	390	700	320	230	170	0.5	0.4
	Average	3801	4524	4874	5593	4750	4076	52.0	11.0

Barley cultivars change to meet market demands

By Aaron Esser

In 2018, the Variety Testing Program had 12 spring barley nurseries across three precipitation zones. Overall, spring barley yields were similar when compared to 2017. Although the summer was dry, weather conditions allowed for more timely planting, and temperatures were relatively mild compared to the previous year. The first nursery was seeded at Walla Walla on March 30, and the last was seeded at Fairfield on May 4.

Of the 12 barley testing locations, results from the Lamont location are not presented because the variability was too large and did not produce usable results. The spring barley trial consisted of 24 entries from all major breeding programs in the Pacific Northwest. Of those 24 entries, 66 percent of the entries were commercial cultivars, and 34 percent of the entries were experimental lines. Table 3 summarizes the 2018 commercial spring barley cultivars yield, two-year average yield, test weight and protein across the three precipitation zones.

Barley has seen a rapid decline in planted acreage in Washington over the past few years, mainly because of non-competitive market prices and the adaption of the Clearfield winter wheat system. The release of Survivor, a two-gene Clearfield tolerant barley cultivar, will help minimize one of the barriers to planting the crop.

There has also been a shift in the end use of barley as 31 percent of the commercial cultivars tested are malt quality, and 12 percent are hullless food barley types. This is evident in the

Precipitation Zone=<16"									
VARIETY	ALMIRA	ENDICOTT	REARDAN	AVG. YIELD	2-YEAR AVG. YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN		
FEED	-----Yield (Bu/A)-----				Lb/Bu		%		
	Altorado	4440	4090	2980	3840		48.9	11.7	
	Oreana	4490	3740	3010	3750		49.8	12.0	
	Lenetah	4220	3880	2960	3690		51.8	10.9	
	Muir	4060	3900	3080	3680		49.3	11.5	
	Claymore	3880	4180	2920	3660		49.5	11.3	
	Lyon	3870	4160	2830	3620		49.8	12.1	
	LCS Vespa	4230	3480	2820	3510		49.3	11.5	
	Champion	3830	3610	3000	3480		52.6	11.2	
	Survivor	3880	3520	2600	3330		50.7	12.2	
MALT	LCS Opera	4380	4490	3190	4020		49.1	10.7	
	LCS Sienna	4350	3740	2990	3690		51.6	11.2	
	CDC Copeland	3440	3790	2880	3370		47.2	11.9	
	LCS Genie	4000	3100	2950	3350		50.1	11.3	
	LCS Odyssey	4190	3220	2320	3250		48.6	11.7	
	Havener ¹	3590	3210	2430	3080		54.9	12.8	
	Meg's Song ¹	3530	2750	2050	2780		52.3	13.8	
	CV %	9	10	8	9		2	6	
	LSD (0.05)	520	500	310	260		0.7	0.6	
	Average	4024	3679	2813	3506		50.3	11.7	

¹Hullless food barley

three new entries this year that include LCS Opera, LCS Sienna and Meg's Song. LCS Opera and LCS Sienna are both malt barleys, and Meg's Song is a hullless food barley. LCS Opera was also very competitive this year as its 2018 average yield topped all three precipitation zones. Full results from the 2018 barley trials can be found at smallgrains.wsu.edu/variety. ■

SOIL HEALTH ASSESSMENT

What is it good for? | By Haiying Tao

As defined by the Natural Resources Conservation Service, soil health is “the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals and humans.”

The term first appeared in the literature in 1971 and during the past 40 years, has gained world-wide attention. In the past six years, interest in soil health among U.S. farmers, scientists, policymakers and environmentalists has grown exponentially due to heightened awareness of farmland degradation and conversion to nonfarm uses—important issues when it comes to feeding our hungry planet.

In response, actions involving private and public sectors have been undertaken to transfer scientific knowledge and technology to farm fields for soil health improvement. A nation-wide effort, the Soil Renaissance was launched on World Soil Day 2013 as a result of a collaborative effort among the Farm Foundation, the Samuel Roberts Nobel Foundation and other scientific organizations. This effort led to the formation of the Soil Health Institute (SHI), whose mission is to “safeguard and enhance the vitality and productivity of soil through scientific research and advancement.”

Washington state’s Gov. Jay Inslee has expressed interest in the state’s soil health status and improving the state’s farmland soils. Researchers at Washington State University (WSU) have initiated many projects in response to commodity groups’ interest in improving soil health. A few of WSU’s long-term projects are among the 125 sites across the U.S., Canada and Mexico selected by the SHI to evaluate soil health.

Eastern Washington soils have been degraded substantially since the beginning of the farming era, but on a year-to-year basis, it may be hard for farmers to make the connection. Questions farmers need to ask themselves include:

1. Why is soil health important on my farm?
2. Aren’t my farming practices good enough to protect my soils?
3. How is soil health evaluated?
4. Should I be doing a soil health assessment?

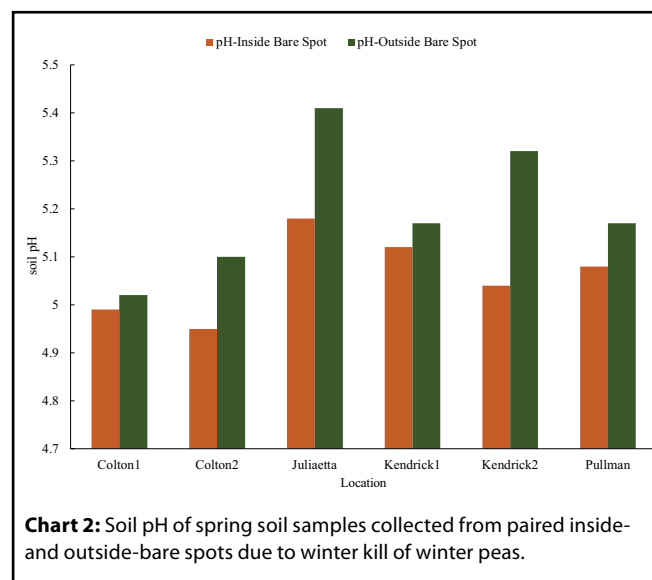
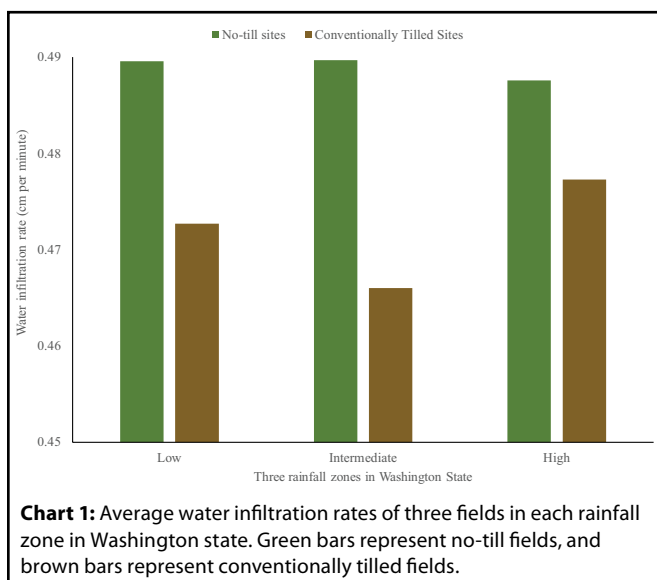
We understand soil is a medium that supports crop production, but we don’t often think about soil serving other functions. Soil helps recharge groundwater by allowing rainfall to infiltrate and filter through the soils. Soil degrades plant and animal residue and supports nutrient cycling. Soil provides habitat for an incredible diversity of organisms such as bacteria, algae, fungi, nematodes, earthworms and insects. Soil also serves as a sink for carbon or as a source for releasing greenhouse gases, important for either mitigating or contributing to wild weather variability.

Soil health is important because healthy soils provide an environment for healthy crops. Healthy soils allow air circulation for optimal nutrient cycling and provide constant and sufficient nutrients throughout the growing season. Healthy soils support root development with the least amount of effort and damage, while allowing roots the greatest potential to reach water and nutrients. Healthy soils also allow efficient rainfall infiltration and water storage while minimizing runoff and nutrient loss.

And that’s not all! Healthy soils support healthy organisms by suppressing plant diseases and parasitic organisms making for healthier plants that can reduce further crop inputs. Improving soil health can boost crop yields and increase crop resilience to many of the uncertainties inherent in farming enterprises.

Soil health indicators measure physical, chemical and biological characteristics of soils. The SHI recently announced 19 Tier 1 and 12 Tier 2 soil health indicators. Tier 1 soil health indicators are most familiar to farmers, including chemical characteristics (total nitrogen; soil pH; electrical conductivity; soil organic carbon; cation exchange capacity; percent base saturation; extractable P, K, Ca, Mg, and Na; extractable Fe, Zn, Cu, and Mn), physical characteristics (texture; aggregate stability; available water-holding capacity; bulk density; penetration resistance; water infiltration rate; erosion rating), and biological characteristics (short-term carbon mineralization rate; nitrogen mineralization rate; crop yield).

Most Tier 2 soil health indicators focus on measuring biological characteristics relevant for evaluating the abundance and diversity of soil organisms. These organ-



isms, regardless of size, are responsible for numerous soil processes, including:

- Breaking down residues and incorporating humus;
- Maintaining nutrient cycling and balance;
- Building soil aggregates and structure;
- Creating spaces and channels for aeration and water infiltration; and
- Redistributing nutrients within the soil profile.

Additional research is required before these indicators can be used with confidence as benchmarks of soil health.

Similar to annual physical exams for people, a soil health assessment provides farmers a comprehensive evaluation of soil health status while diagnosing issues. In the long term, the assessment can provide documentation to monitor changes in soil health and evaluate how management practices have changed each indicator. This assessment allows farmers to make strategic changes to prevent further degradation and improve soil health that in turn sustains soil and crop health. Specific benefits of a comprehensive soil health assessment include:

- The opportunity to establish a baseline and document changes. Because soils are diverse, establishment of universal and absolute targets of critical values is impossible. Therefore, soil health assessments must include a baseline for every field to accurately document changes.
- Benchmarking soil health to soil management practices, natural soil properties and climate, which can help identify soil health improvement strategies. Chart 1 shows how tillage practices influence

water infiltration rates in three rainfall zones in Washington. These preliminary data indicate that switching from conventional tillage to no-till may improve soil infiltration, and this benefit may be most pronounced in the intermediate rainfall zone.

- Linking soil health problems to crop health problems. Chart 2 shows soil pH values of spring soil samples collected from paired inside- and outside-bare spots due to winter kill of winter peas. Results suggest that soil pH might affect crop development in the fall and, therefore, winter survival of winter peas. Variable lime application rates in these fields could be a solution.
- Linking soil health assessment to crop health, aerial imagery (drones provide better resolution) and satellite imagery. Such imagery data can be used to diagnose soil health issues and make site-specific soil, fertility and residue management recommendations.
- Selecting the appropriate crops and crop rotation. When soil health changes, farmers may need to make changes in crop selection. Farmers may want to include crops with deep tap root systems in rotation when fields have subsoil compaction that restrict rooting depth.

The most recent soil health assessment project for Eastern Washington soils was initiated in 2017. More projects and educational programs are expected to launch in the near future. Farmers who wish to participate in a soil health evaluation should contact Dr. Haiying Tao, Department of Crop and Soil Sciences, Washington State University, at haiying.tao@wsu.edu or by phone at (509) 335-4389. ■

WHEAT WATCH

WASHINGTON GRAIN COMMISSION

Shutdown stymies analysts, farmers



By T. Randall Fortenbery

Due to the partial government shutdown that began Dec. 22, the U.S. Department

of Agriculture (USDA) was not able to release a significant amount of market-sensitive data in late December and January. Normally, we would get an update to the monthly World Agricultural Supply and Demand Estimates (WASDE) that provide domestic demand projections, including exports, as well as supply and demand estimates from other countries.

In addition, the final estimates of production for fall-harvested crops are released in January, as well as the estimates of total acres seeded to winter wheat and canola. Quarterly reports are also issued in January, including the Quarterly Grain Stocks report that provides the on and off farm inventories for wheat as of Dec. 1 (the end of the second quarter of the marketing year). Finally, the weekly updates of wheat export activity have not been updated since Dec. 22. As a result, market analysts have been debating the overall supply/demand conditions in wheat and other agricultural markets without the usual baseline data provided by USDA.

A major report issued by USDA prior to the government shutdown was their Farm Sector Profit Forecasts. In late November, USDA estimated that net farm income for U.S. producers in 2018 would total \$93.4 billion, a decline of

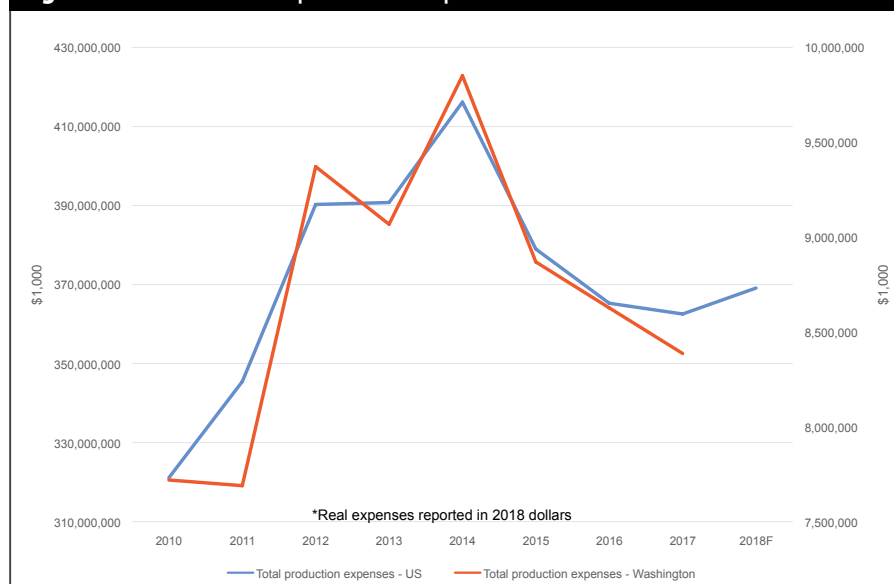
10.5 percent, or \$10.9 billion, from 2017. Net farm income includes both cash receipts from farming and other farm-related income, including government payments, minus cash expenses. It does not include things like changes in inventories or depreciation. Including depreciation and other noncash expenses results in net farm income, and this is expected to total \$66.3 billion in 2018, down 12.1 percent from 2017.

Total farm receipts (sales) are actually estimated to have been higher in 2018 compared to 2017, but this increase is more than offset by a 4.2 percent increase in production expenses (Figure 1). The largest increases in estimated expenses came from fuel and oil, interest costs, feed for livestock and hired labor. Production expenses had declined for three years in a row leading up to 2018.

For crop farmers in aggregate, total crop receipts for 2018 are expected to be about 1.5 percent above 2017 and total \$199.2 billion. For U.S. wheat, the total volume sold fell between 2018 and 2017, but this was more than offset by higher 2018 prices, thus revenue from farm wheat sales actually increased about 5.1 percent in 2018. Wheat prices are projected to be higher again in 2019.

A major determinant of wheat prices in January and February is often the pace of exports. While the Foreign Agricultural Service of USDA ceased publishing its weekly export sales report during the shutdown, the Agricultural Marketing Service of USDA did continue to publish data on grain inspections for export. According to reported data through mid-January, 13.5 million metric tons (or about 496 million bushels) of wheat had been inspected for export in the current marketing year, compared to 15.2 million metric tons for the same time last year. Thus, wheat exports appear to be running about

Figure 1: Total farm level production expenses*



11 percent below last year's pace despite USDA's expectation that exports would actually increase 11 percent this year.

Futures markets for wheat following the suspension of USDA data releases have been range bound and have exhibited stable trading volume (Figure 2). Cash prices for Washington producers have also traded in a relatively tight range since mid-December, with white wheat prices on the Palouse averaging between \$6.20 and \$6.36 per bushel. As a result, it does not appear that the shutdown has had a negative impact on wheat market activity to date.

Nationally, wheat farmers have enjoyed some price improvement over the last couple of years, but USDA's most recent 10-year price projection is for relatively flat prices in coming years. Figure 3 shows the national average U.S. wheat price over the last couple of years compared to the projected prices through the 2028/29 marketing year. These price forecasts were generated in October 2018 and are a bit below the earlier forecasts. They will be updated again in February 2019 assuming a resumption in regular USDA activity.

The price projections are based on several critical assumptions. First, for the coming year, the forecast assumed normal planting progress for U.S. winter wheat last fall. This did not happen. A significant portion of the U.S. winter wheat growing areas experienced poor weather conditions that delayed harvests of both corn and soybeans, and this, in turn, pushed back planting of the 2019 winter wheat crop in those areas.

Over the next decade, and following the 2018/19 crop, U.S. production is projected to consistently exceed 2 billion bushels per year based on an annual average of between 47 and 48 million acres planted to wheat. Yields are projected to continue to increase consistent with a 30-year trend. The price forecasts assume no production issues either domestically or elsewhere in the world and thus represent an optimistic global wheat production scenario. Anything that impacts the production prospects in a negative way will likely result in better-than-forecast prices, thus a reasonable interpretation of the price forecasts from a supply perspective is that they represent the bottom end of likely prices—the low prices projected are possible but would require normal planting and growing conditions worldwide over the forecast horizon.

The USDA price forecasts also assume that

Figure 2: March soft red wheat futures price and trade volume

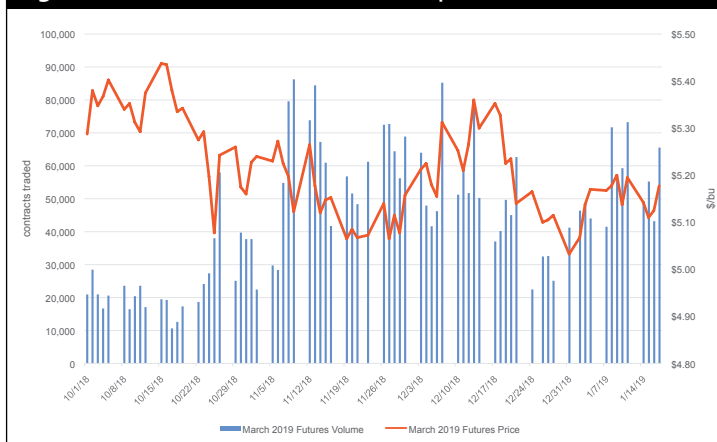
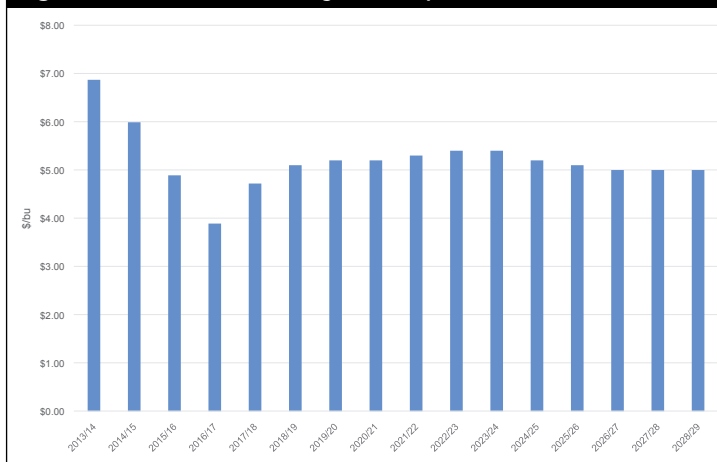


Figure 3: U.S. national average wheat prices



the U.S. share of world wheat trade will decline over the next decade, while total world wheat trade increases. The actual volume of U.S. wheat exports is projected to increase but at a slower rate compared to major export competitors. The greatest export growth is expected to come from the Former Soviet Union (FSU) countries, specifically Russia and Ukraine. The FSU countries are projected to increase their world trade share from about 23 percent in the early 2000s to more than 31 percent by 2027/28. This is expected to account for about 37 percent of the total increase in world wheat trade. If this occurs, the U.S. trade share will fall from about 15 percent a few years ago, to just more than 14 percent this year, to about 13 percent by 2027/28. These projections do not account for any trade opportunities lost in the current trade disputes. If the current trade environment does not improve following the 2018/19 marketing year, then the market share deterioration could be greater than currently forecast. ■

Randy Fortenbery holds the Thomas B. Mick Endowed Chair in Grain Economics at Washington State University. He received his Ph.D. in Agricultural Economics from the University of Illinois-Urbana/Champaign.

WHAT'S IN A NAME?

DISCOVERING HOW EASTERN WASHINGTON PLACES GOT THEIR MONIKER | BY TRISTA CROSSLEY

Editor's note: Take the following information with a grain of salt, as there is no way to verify some of it. Some of these places only existed on paper, and some have long since disappeared or become ghost towns. Due the number of entries, we have chosen to break this into two articles. Here's the first part.

One of my favorite parts of this job is driving around the dirt back roads of Eastern Washington and stumbling across a forgotten homestead or the remains of an old schoolhouse. This past summer in Douglas County, I drove past an overgrown, seemingly forgotten cemetery with the most curious name—Mold Cemetery. Usually, a cemetery goes hand in hand with a community, and I got to wondering, who would call their town Mold? I stopped to take some pictures and then filed the idea away until just recently, when I found the pictures again as I was cleaning out my camera's memory disk.

A quick internet search told me that Mold was named after the texture of the local soil. Wikipedia also linked back to a 1923 book, "Origin of Washington Geographic Names," by Edmond S. Meany, a history professor from the University of Washington. Now, two of the things I love almost as much as wheat (okay, and chocolate) are maps and learning how places got their names. I immediately got lost in this book and thought it would be fun to share some of the more informative and entertaining entries.

According to the book's introduction, Edmonds gathered his information by consulting earlier works, such as the Wilkes Expedition of 1841, records kept by British captains, railroad officials and the Lewis and Clark Expedition. One of the most frequently cited references is a publication Edmonds refers to as "Names MSS." In compiling "Names MSS," the researchers sent letters to postmasters, newspapers and pioneers asking for information on geographic names and compiled the responses for future reference.

If you want to read more on the origin of Washington names, you can search for "Origin of Washington Geographic Names" at babel.hathitrust.org. Here's some of the entries I found most entertaining or informative, beginning, of course, with Mold.

Mold. A town in the eastern part of Douglas County. On April 11, 1899, the postmaster, Marshall McLean, chose that name as being different from any other in the state and as being descriptive of the rich soil in that vicinity.

(Marshall McLean, in Names MSS, Letter 107.)

Almota. A town and three creeks in Whitman County. The creeks are West Almota, Little Almota and Almota. Rev. Myron Eells is authority for the statement that the name is a corruption of the Nez Perce word "Allamotin," meaning "torch-light fishery." Lewis and Clark camped there on Oct. 11, 1805, and mention the Indian houses, which John Work of the Hudson's Bay Company found and described in his journal of 1825.

Alpowa. A creek and a town in Garfield County. Originally a town was started under the

name of "Alpowa City" where Silcott, Asotin County, is now located. The word Alpowa is from the Nez Perce language and means "a spring forming a creek," although Thomas Beal, an old pioneer, says it came from missionary experiences and meant that on Sundays they should go to church. The Nez Percés formerly had a village at the mouth of the creek where it flows into the Snake River. The name has also been spelled "Alpahwah" and "Elpawawe." *(Fred W. Unfried, in Names MSS, Letter 322.)*

Appledale. A town in Douglas County. In 1909, the Great Northern Railway Company built a branch line from the Columbia River to Mansfield, Douglas County. This place was then called Appledale on account of the many apple orchards there. *(Julius Hollenbeck, in Names MSS, Letter 478.)*

Asotin. A county, a town and a creek in the southeast-



Columbia School at Milton Mills in 1893 (see the "Longs" entry in this article). The school district was renamed as Columbia District #1 when Columbia County was formed out of Walla Walla County. Located near Milton Mills, Wash., the school was built in 1875 to replace the former saloon building that had been used as their first school. Photographer is unknown. Photo courtesy of the Columbia County Rural Library District. (waccrld_eccsp_038.washingtonruralheritage.org)

ern corner of the State. The name is from the Nez Perce language and means "eel creek" from the abundance of eels caught there. The town at the mouth of the creek, where it flows into Snake River, took the same name in 1878, as did the county when it was organized under the law of Oct. 27, 1883.

Attalia. A town in Walla Walla County. It was named by Mrs. V. K. Loose of Seattle. While touring Italy, she visited a little hamlet whose name appealed to her so strongly that her husband adopted it for his irrigation and townsite projects in 1906. (*R. C. Julian, in Names MSS, Letter 341.*)

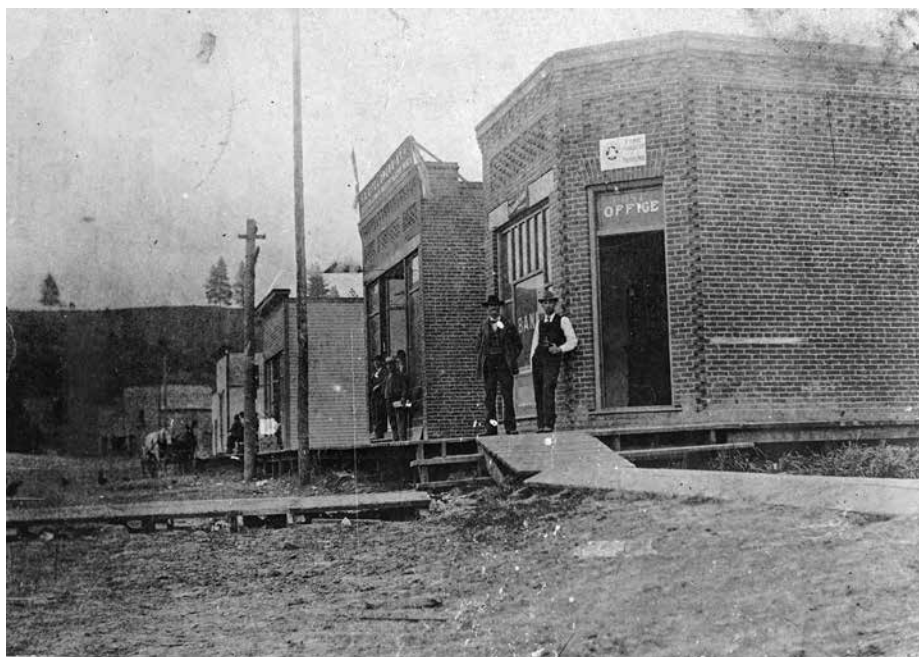
Bacon. In Grant County. The place was named by the railroad builders in 1900. The name was given as a joke, but still remains. (*Arch Gill Bacon, in Names MSS, Letter 523.*)

Berlin. A projected town in Garfield County. *The "History of Southeastern Washington,"* page 549, says: "Berlin was platted Jan. 9, 1883, by Charles Ward and Sarah E. Ward, his wife. Ward's addition was platted June 23, 1884, by the same parties. But this town existed only on paper. At one period it was rumored that Berlin would become a candidate for the county seat as a compromise between Pomeroy and Pataha City, but nothing eventuated."

Bluestem. A town in Lincoln County. It is in a large, wheat-growing section and "bluestem" is the principal kind of wheat grown there. This gave rise to the name. (*H. A. Thompson, in Names MSS, Letter 256.*)

Bonita. A town in Douglas County. It was named in 1902 by Lieutenant Edward Nasler from a name he picked up in the Philippine Islands. (*G. T. Goudrey, in Names MSS, Letter 421.*)

Buckeye. A town in Spokane County. It was formerly known as "Hoch Spur" but was changed by



The bank and post office on the corner in the business district of Elberton, Wash., in 1899. Individuals are unidentified, and photographer is unknown. Photo courtesy of the Whitman County Library online heritage collection. (WCLWSU014. washingtonruralheritage.org)

the Buckeye Lumber Company, which operated a sawmill there. (*Names MSS, Letter 191.*)

Corfu. A town in Grant County. The name was probably imported from Greece by the officers of the Chicago, Milwaukee & St. Paul Railway Company. (*H. R. Williams, in Names MSS, Letter 530.*)

Creston. A town in Lincoln County. Local tradition has it that the Northern Pacific Railway engineers suggested the name because Brown's Butte overlooking the town on the south is the crest of the land in the Big Bend Country. It was named about 1889. (*D. Frank Peffly, in Names MSS, Letter 878.*)

Deadman Creek. A tributary of the Snake River in the northern part of Garfield County. The winter of 1861-62 was very severe. Many cattle perished, and two miners, probably on their way to the Oro Fino mines, perished. Their bodies were found at a place that has since been known as Deadman Hollow. (*"History of Southwestern Washington,"* page 500.) Formerly there was a post office in that vicinity by the name of "Deadman." It was discontinued in August 1880. The name of the creek, arising from the same fatality, is continued on recent maps.

Dixie. A town in the southeastern part of Walla Walla County. Herman C. Actor was the first settler, but more interesting were the three brothers Kershaw, also early settlers. They were musicians, and their favorite tune was "Dixie." They became known as the "Dixie" boys. Where they located, the crossing of the creek became known as Dixie Crossing, a Dixie School, Dixie Cemetery and finally Dixie Station on Doctor Baker's pioneer railroad, completed the evolution of the town's name. (*"History of Southeastern Washington,"* pages 166-177.)

Elberton. A town in the eastern part of Whitman County. Mr. Wait owned land there. His son Elbert died about the time the town was platted. The father's request that the town be called Elberton was granted. (*W. B. Peoples, in Names MSS, Letter 214.*) ▶

Fairfield. A town in the southeastern part of Spokane County. It was named in 1888 by E. H. Morrison on account of the extensive grain fields surrounding the town and also to please Mrs. Morrison, who once lived in a town of that name in the East. (*George W. Darknell, in Names MSS, Letter 848.*)

Farrington. A town in Franklin County, originally known as Windust after the name of a ferry and its owner at that place. The name was changed to its present form in honor of R. I. Farrington, comptroller of the Great Northern Railway Company. (*L. C. Gilman, in Names MSS, Letter 590.*)

Fishtrap. A town in Lincoln County, the station being formerly known as Vista. A small lake nearby was called Fishtrap because the Indians had natural traps there for taking fish, which are still plentiful. The post office was located on the land of John W. Lawton, who suggested the name of Fishtrap in June 1906. (*Irene Lawton, in Names MSS, Letter 238.*)

George Creek. A branch of Asotin Creek in Asotin County. In early days when white settlers were few, Indian George trapped and fished on that creek, which gave rise to its name. (*James Buchan of Jerry, in Names MSS, Letter 366.*)

Grange City. A town in Columbia County. During the Granger movement of 1875, Colonel George Hunter canvassed among the Grangers, and with the money raised, he built a warehouse in the spring of 1876. From this arose the name of Grange City. (*"Illustrated History of Southeastern Washington," pages 376-877.*)

Gregor. A station on the Spokane, Portland & Seattle Railway in Adams County. It was named for a prominent owner of land in that vicinity—McGregor—but was short-



A steamboat (possibly the Lewiston or the Spokane) anchored in the snow and ice on the Snake River at Almota, Wash. Photo taken in 1917; photographer unknown. Photo courtesy of the private collection of Dave Peterson and the Whitman County Library online heritage collection. (WCLR415. washingtonruralheritage.org)

ened so as to avoid confusion with the name of McAdam, another station on the same division of the railroad. (*L. C. Gilman, in Names MSS, Letter 590.*)

Hanford. A town on the Columbia River in the northeastern part of Benton County. It was named in 1906 by the Hanford Irrigation and Power Company, in honor of the president of the company, Cornelius H. Hanford of Seattle, who was one of the founders of the big reclamation project and who was also the first and most prominent Federal Judge in the state of Washington. (*Postmaster at Hanford, in Names MSS, Letter 12.*)

Hatton. A town in the southwestern part of Adams County. The place was originally known as Twin Wells. When the post office was established in 1888, the post office department asked for a new name. The superintendent of the railroad asked the postmaster, J. D. Hackett, for a list of the patrons of the office. One of the names submitted was Sutton (father of State Senator Sutton), whereupon the railroad man took the first two letters of Hackett and the last four letters of Sutton and submitted the composite name of Hatton, which was adopted. (*Mrs. Ida Belle Hackett, in Names MSS, Letter 476.*)

Huntsville. A town in the westcentral portion of Columbia County. During the winter of 1878-79 members of the United Brethren Church raised a fund of \$10,000 to endow a university. B. J. Hunt was manager. With John Fudge, he donated 90 acres for a townsite, which on being platted, received the name of Huntsville. School was begun there in the Washington Institute on Nov. 4, 1879. (*"Illustrated History of Southeastern Washington," page 374.*)

Jerry. A town in the northeastern part of Asotin County, named by John Knight, on Aug. 1, 1906, in honor of Jerry McGuire, a stock rancher who owned land there since 1875. The former name was Grand Junction, because Asotin and George Creeks joined there. (*James Buchan, in Names MSS, Letter 317.*)

Kahlotus. A town in the western part of Franklin County. It was first called Hardersburg, but the post office department objected to the length of that word, and the Indian name was chosen. It means hole-in-the-ground. The first

settlers built there in 1901. (*E. B. Poe, in Names MSS, Letter 410.*) The Washtucna Enterprise is authority for the statement that when the Northern Pacific, Connell Branch, was built, station sign boards were mixed, and the Kahlotus sign was left where the town of Washtucna was located. (*Names MSS, Letter 386.*)

Keystone. A town in the north-eastern part of Adams County. It was named in 1900 or 1901 by the first postmaster, John W. Smith, in honor of his native state of Pennsylvania. (*Postmaster, Keystone, Names MSS, Letter 351.*)

Lamoine. A townsite and former post office about six miles northwest of Withrow, Douglas County. It was originally called "Arupp." When a post office was being secured, a permanent name was under discussion in a small store. A man named Bragg reached to the shelf and took down a can of sardines labelled "Lamoine," asking, "What is the matter with that as a name for the town?" The suggestion was approved. In 1909 or 1910, on the completion of the Great Northern branch line across the Douglas County plateau, Lamoine was missed by about six miles, and Withrow supplanted it. The old post office was discontinued. There remain two or three residences, a schoolhouse and a large public hall belonging to the Farmer's Educational and Cooperative Union. Aside from these, Lamoine is a memory. (*W. H. Murray, publisher of the Withrow Banner, in Names MSS, Letter 104.*)

Latah. A town in the southeastern corner of Spokane County and a creek flowing northwesterly to the Spokane River near the city of Spokane. The railroad surveyors called it "Camas Prairie Creek" in 1853. (*Pacific Railroad Reports, Volume XI, Part II, Chart No. 3; Volume XII, Book I, map.*) In 1858, Colonel George Wright, while punishing the Indians



Group portrait of the Hatton baseball team in 1912. From left, back to front, are Charley Greib; Homer Cottingham; Guy Reeder; unidentified; Harold Johnson; Jim Wooters; Alvin Johnson; Dan Lyle; unidentified; and Walt Johnson. Photographer is unknown. Photo courtesy of the Adams County Historical Society. (adamschs0084. washingtonruralheritage.org)

for their defeat of Colonel Steptoe, killed about 800 Indian horses and hanged a number of Indians. The creek flowing near received the name of "Hangman Creek." Colonel Wright dated his dispatches "Camp on the Nedwhauld River." Others of his party wrote it "Neduald," "Nedwhuald" and some wrote it "Lahtoo." Father Eels said one Indian name was "sin-too-too-oooley" or "place where little fish are caught." Objecting to the gruesome word "Hangman," the legislature changed it to Latah, "a clumsy corruption of the more euphonious Indian word 'Lahtoo.'" (*N. W. Durham, "Spokane and the Inland Empire," page 254.*) Major R. H. Wimpy settled near the present town of Latah in the early 1870s, and the post office was named "Alpha" in 1875 but soon afterwards it was changed to Latah. Other early settlers were Benjamin F. Coplen and Lewis Coplen. The town was platted in 1886. (*"History of Spokane County," page 277.*)

Longs. A railroad station in Columbia County, midway between Dayton and Huntsville. It was an important place in the early days, the first flouring mill in the county being located there in 1866, when it was known as Milton Mills. (*"History of Southeastern Washington," page 379.*)

Longview. A town in Benton County on the north bank of the Columbia River. It was first named Gravel on account of the prevailing material there. It was changed to Francis and again to Tuton. This was thought to conflict with the name of another station, Luzon, and was again changed to Longview, on account of the long view of the Columbia River. (*L. C. Gilman, in Names MSS, Letter, 590.*)

Lowgap. A town in the southwestern part of Grant County. It was named for the gap in Frenchman Hill by G. Grant in 1905. (*Postmaster at Lowgap, in Names MSS, Letter 217.*) ■

Landlords: Know your farmland's key metrics

By Sara Schafer
Editor, Top Producer

Properly managing your farmland goes beyond determining your rental rate.

"To ensure your land is reaching maximum productivity and profitability takes year-round effort, which requires time and dedication," says Mark Gannon, owner of Gannon Real Estate & Consulting in Ames, Iowa.

Take a comprehensive look at your farmland, focusing on financial, agronomic and environmental stewardship metrics, Gannon suggests. Gather past and present data for rental rates, profitability, fertilizer information, soil test results, yield maps, crop insurance claims, etc. This will help you clearly assess the present status of your land. To obtain some of this farm data, include specific language in your rental agreement.

"Operators collect tremendous amounts of data on all of the properties they farm and use it to make informed decisions, which helps increase their profits," Gannon says. "This should be no different for landowners. The majority of operators are willing to provide data to their landlords."

By collecting and analyzing this information, you can set financial, agronomic or conservation goals for your

farmland. The same is true for your tenant.

"Everybody wants to do the best thing for the property," Gannon says. "Full disclosure of this information helps to do that."

What to request from Your tenant

To fully understand your farm's production and profit capacity, you need access to agronomic information, says Gannon. Create a list of the information you want to receive from your operator. Consider the following items:

- **Acreage planted:** The crops planted in each field, as well as the planting rates.
- **Fertilizer applied:** The fertilizer types and rates for each field.
- **Crop chemicals used:** The date of application and application rate for each chemical.
- **Soil tests:** The date and type (grid, zone, etc.) for every soil test completed on each field.
- **Yield results:** Insurance quotes, yield maps or scale tickets to show per-acre yields for each field. You might also want to request historical yields. ■

Editor's note: This article originally appeared on agweb.com in May 2018.



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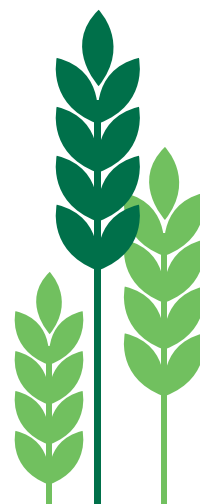
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THE BOTTOM LINE

Minimizing disinheritance contests to estate plans

By Paul D. Fitzpatrick
Attorney, Foster Pepper PLLC

You have always planned to treat all of your children fairly! Now, you realize that the child chosen to inherit the family farm operations will not be able to manage it. More importantly, that child has severed most channels of communication with you and other family members. The question confronting you is how do you disinherit the child and minimize the turmoil that will be unleashed after you pass away?

A few key points:

1. You can disinherit a family member.
2. You cannot, repeat cannot, stop a person from contesting your estate plan.
3. You do not have to leave an heir anything—not a dollar! Not \$100! Your estate will be better positioned if you do not make a gift. By making a gift, you give the person statutory rights that do not accrue if there is no gift.
4. If you have any concerns that an heir will contest your estate plan, plan as if the contest will occur! Create an appropriate plan! Implement the plan!

The following actions create high probability of a contest to your estate plan:

- Disinherited family members;
- Unequal distributions among people of the same class;
- Unequal participation in family businesses by children;
- Impaired beneficiaries;
- Presence of one beneficiary in the estate planning process to the exclusion of others; or
- Substantial deviations from prior estate plan documents.

There are several grounds to contest an estate plan:

- Lack of competency;
- Undue influence;
- Fraud;
- Duress; and
- Mistake.

To provide assurance against a contest that relies on one or more of the reference grounds, it may be wise to retain a third-party attorney to review and establish the absence of any one or more of the reference grounds.

If you decide to disinherit an heir, the most important thing you can do to address any anticipated contest is to create a record as to your competency. If there is any concern, you need to take steps to establish an evidentiary record NOW.

- Your personal attorney is not someone who is best positioned to determine if you are competent.
- If there is a concern, it is imperative that you retain a qualified mental health professional to build a record.
- A report must be prepared and retained.
- At the time of execution of any estate-planning document, the attorney should question you in the presence of the witnesses. As soon as possible after this exchange, the attorney needs to memorialize the meeting—questions asked; responses given; why the attorney was able to form an opinion as to your competency.

A “no contest” (*in terrorem*) clause is enforceable in the state of Washington. Such a clause is enforceable unless the contest is brought in good faith and with probable cause. Good faith means the individual, at the time the claim is made, believes that the claim is valid. This is a subjective term.

“Probable cause,” established at the time the claim is filed, is evidence that would lead a reasonable person, who is properly informed and advised, to conclude there is a substantial probability that the challenge will succeed. This is an objective standard. Each and every claim must satisfy the standard. Fail one claim, and all of the claims fail. Simple “no contest” clauses should be avoided. The clause should address the anticipated beneficiary and claims, whether direct or indirect.

A standard no contest clause will address:

- Documents created during life or at death;

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- Nature and extent of estate planning documents that may be attacked— will, trust, beneficiary designation;
- Any discretionary action taken by a fiduciary or advisor at your direction;
- Takes the action directly or through use of a third party;
- Imposes all cost, regardless of outcome, on the contesting party and limits the ability of that person to challenge fiduciary or action taken; and
- Other relevant factors of your situation.

One of the best defenses to a contest is how a gift to a problematic beneficiary is structured. You can limit the beneficiary's ability to challenge the action of the fiduciary so as to reduce the probability of a contest. The no contest clause can make one or more claims a basis for triggering the clause. You may want to consider having mandatory arbitration as to any claim. It is still not clear if videotaping the execution of your estate planning documentation provides a stronger defense to a challenge. A thorough review of the underlying situation and of how you may act or react on videotape must be considered.

It is becoming evident many beneficiaries start a contest to determine how much their family will pay to get them to go away. It is possible to create a no contest clause that shifts significant portions of the cost and consequences onto the contesting party. ■

Paul D. Fitzpatrick has more than 40 years of legal practice in Eastern Washington and Northern Idaho. He has worked with families to preserve and transition assets and businesses to successive generations. He is an accredited estate planner with the National Association of Estate Planning Councils and can be reached at (509) 777-1600 or at paul.fitzpatrick@foster.com.



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Maci (2 ½) makes a wheat angel during harvest 2018 just north of Almira. Photo by Amy McArthur.



Near Dusty during harvest 2018, Derek Repp (13) watches while his father, Aaron, and brother, Darin (11), unload the bank-out wagon. Photo by Kristin Repp.



The future harvest crew at Sherwood Farms near Wilbur. From left are Grace DeBord (5), Oakleigh Sherwood (3), Weston Sherwood (4), Kami DeBord (11), Harper Sherwood (1), Creighton DeBord (13) and Knox Sherwood (6 mos). They are the grandchildren of Ron and RoxAnn Sherwood. Photo by RoxAnn Sherwood.



A new friend we made on lunch break during harvest at Polson Farms south of Waterville. Photo by Max Polson.



A sunset view in the wheat fields through a glass orb. Photo by Sally Eckhart.



Bell Farms south of Odessa. Picture by Brenden Bell.

HAPPENINGS

All dates and times are subject to change.
Please verify event before heading out.

FEBRUARY 2019

5-7 SPOKANE AG EXPO. The largest farm machinery show in the Inland Northwest. More than 250 agriculture suppliers and service companies all under one roof at the Spokane Convention Center. greater Spokane.org/ag-expo/

7 WAWG BOARD MEETING. Meeting starts at 10 a.m. at Washington Wheat Foundation Building, Ritzville, Wash. (509) 659-0610, wawg.org

13 AG POLICY OUTLOOK AND WORKING WITH THE NEW NORMAL OF NATURAL WEATHER AND CLIMATE. AMMO workshop presented by Clinton Griffiths and James Garriss. 10 a.m. to 2 p.m. at the Holiday Inn Airport in Spokane, Wash. Lunch is provided. No charge for WAWG members; cost for nonmembers is \$25. Preregister at least 3 days in advance by calling (877) 740-2666 or print out and mail registration form at wawg.org/ammo-workshops/

19 MARKET OUTLOOK AND THE FOUR RULES OF UNDERSTANDING MARKET BEHAVIOR. AMMO workshop presented by Darin Newsom. 10 a.m. to 2 p.m. at the Holiday Inn Airport in Spokane, Wash. Lunch is provided. No charge for WAWG members; cost for nonmembers is \$25. Preregister at least 3 days in advance by calling (877) 740-2666 or print out and mail form at wawg.org/ammo-workshops/

20-21. WASHINGTON GRAIN COMMISSION RESEARCH REVIEW. Pullman, Wash. For more information and to RSVP, contact Mary Palmer Sullivan at (509) 456-2481 or mary@wagrains.org

21 SOIL ACIDITY AMELIORATION. One-day workshop about using soil amendments to increase soil pH and improving soil and plant health. Presented by WSU Extension and the Farmer's Network. Workshop begins at 7:45 a.m. at Banyans on the Ridge-Pavillion in Pullman, Wash. extension.wsu.edu/farmers-network/education/workshops/soil-acidity-amelioration/

27 2ND ANNUAL PALOUSE ALTERNATIVE CROPPING SYMPOSIUM.

This event will promote healthy soils and profitable farming. Local farmers will share experiences from on-farm trials and efforts to find what works for their operation. 10 a.m.-4 p.m., View Room, Gladish Community Center Pullman. Lunch provided. More information and RSVP at palousecd.org/symposium

28 VARIETY OPTIONS TO MEET TODAY'S CHALLENGES. AMMO workshop presented by Ryan Higginbotham. 10 a.m. to 2 p.m. at the Washington Wheat Foundation Annex in Ritzville, Wash. Lunch is provided. No charge for WAWG members; cost for nonmembers is \$25. Preregister at least 3 days in advance by calling (877) 740-2666 or print out and mail form at wawg.org/ammo-workshops/

MARCH 2019

3 SAUSAGE FEED. All you can eat from 10 a.m. to 5 p.m. Menu includes home-made sausage, sauerkraut, mashed potatoes, green beans, roll, applesauce, pie and beverage. Beer garden. Uniontown Community Center, Uniontown, Wash. uniontownwa.org/events/

5 AIR QUALITY WORKSHOP. This Franklin Conservation District workshop will focus on innovations in dryland farming. It will include a WEEDit demonstration, information on a hoe drill modified for no-till, a farm bill update and more! Lunch will be provided to the first 30 who preregister. Contact Melissa Pierce at (509) 736-6000 or Melissa-pierce@conservewa.net. Kahlotus Grange Hall in Kahlotus, Wash., from 9 a.m. to noon.

6 AIR QUALITY WORKSHOP. This Benton Conservation District workshop will focus on innovations in dryland farming. It will include a WEEDit demonstration, information on a hoe drill modified for no-till, a farm bill update and more! Lunch will be provided to the first 30 who preregister. Contact Melissa Pierce at (509) 736-6000 or Melissa-pierce@conservewa.net. Horse Heaven Hills Community Center in Prosser, Wash., from 9 a.m. to noon.

8-10 SPRING ARTS AND CRAFTS SHOW. Features 300 professional artists and crafters from across the U.S. Spokane Fair and Expo Center, Spokane, Wash. custershows.com

12 WAWG BOARD MEETING. Meeting starts at 10 a.m. at Washington Wheat Foundation Building, Ritzville, Wash. (509) 659-0610, wawg.org

22-24 SPRING ARTS AND CRAFTS SHOW. Features 150 professional artists and crafters from across the U.S. TRAC Center, Pasco, Wash. custershows.com

APRIL 2019

6-7 SPRING FARMING DAYS. Horse, mule and antique tractor farming on 13 acres. Activities starts at 9 a.m. both days. Limited camping available. Eastern Washington Agricultural Museum will be open. Garfield County Fairgrounds east of Pomeroy, Wash.

11-14 WASHINGTON STATE SPRING FAIR. Baby animal exhibits, food, entertainment, demolition derby and monster truck show. Washington State Fairgrounds in Puyallup, Wash. thefair.com/spring-fair

13 LEAVENWORTH ALE-FEST. Brews, food and music. leavenworthalefest.com

20 EASTER EGG HUNT. Kids should bring their own baskets and enjoy an Easter egg hunt dash from 11 a.m. to 1 p.m. at Holzer Park in Uniontown, Wash. uniontownwa.org/events/

25-MAY 5 WASHINGTON STATE APPLE BLOSSOM FESTIVAL. Parade, carnival, golf tournament, apple pie and dessert bake-off, live entertainment, auction. Wenatchee, Wash. appleblossom.org ■

Submissions

Listings must be received by the 10th of each month for the next month's *Wheat Life*. Email listings to editor@wawg.org. Include date, time and location of event, plus contact info.

Input needed on herbicide resistance

Resistance to herbicides in weeds is a rapidly emerging problem in American agriculture. New weed management approaches are needed in order to maintain the sustainability of agricultural production systems in the U.S., including the Pacific Northwest. We are part of an interdisciplinary team at Washington State University and are inviting growers to participate in a survey on this topic. The goal is to help us learn more about the attitudes and practices of individuals like you who play a crucial role in herbicide resistant weed management.

The results of this survey will help us create a knowledge base of what is happening on the ground in order to develop more effective and efficient weed management practices specific to wheat in the Pacific Northwest. Completing the survey should take about 20 minutes and is completely voluntary.

This study has been endorsed by the Washington Association of Grain Growers, the Idaho Grain Producers Association and the Oregon Wheat Growers League.

If you are able to help us out, please complete the survey at wsu.co1.qualtrics.com/jfe/form/SV_7aHcKzfieWQLsOx

We look forward to hearing about your opinions and appreciate your participation. If you have any questions or concerns, please do not hesitate to contact survey coordinator Katherine Dentzman at katie.dentzman@wsu.edu.

Ian Burke, Drew Lyon, Katherine Dentzman and Jessica Goldberger, all from the Washington State University, Department of Crop and Soil Sciences. ■



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